

# Graphing Calculator Guidelines Guidance for Transcription Using UEB

**Developed by the Braille Authority of North America** 

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## **GRAPHING CALCULATOR GUIDELINES**

Graphing calculator guidelines are based on the UEB Guidelines for Technical Material updated August 2014 (GTM); Rules of Unified English Braille, Second Edition 2013; Braille Formats: Principles of Print-to-Braille Transcription 2016 (BF); and Guidelines and Standards for Tactile Graphics 2010.

## **1** Graphing Calculator Labels

TI-81, TI-82, TI-84 Plus, TI-92 Plus, etc. In braille:

### 2 Calculator Keystroke

- 2.1 The keystroke may be shown in print text with brackets, a clear or shaded rectangular box, a clear rectangular box with rounded corners, etc. Follow *UEB Guidelines for Technical Material*, Section 14.2 for transcriber-defined shapes.
- 2.2 Keystroke symbols: use the transcriber-defined shape **HERRIN** (open calculator keystroke) followed by the physical enclosure symbol **HERRIN** and the shape terminator **HERRIN** (close calculator keystroke). For clarity in transcribing graphing calculators only, the termination indicator is retained and used to close each keystroke.
- 2.2.1 The keystroke symbols are listed on the Special Symbols page.
- 2.3 If keystroke commands are shown as fully capitalized words in print, retain full capitalization in braille.
- 2.4 Text within a keystroke is in Grade 1 mode. No contractions are used within keystroke symbols, and standing alone characters do not require a Grade 1 indicator.
- 2.5 No spaces are inserted between a series of keystrokes or between items within keystrokes unless they are separated by commas in print.
- 2.5.1 Spaces are inserted between keystrokes and explanatory bracketed or parenthesized items.
- 2.5.2 It is preferable to keep keystroke constructions on one line if possible.
- 2.5.3 A division may be made between keystrokes but not within a keystroke construction.
- 2.6 Where print shows a box and brackets for different reasons, retain both.

## 3 Text Surrounding a Screen

Emphasized words or expressions in the surrounding text that replicate words/expressions in the screen should be transcribed as they appear in the screen and emphasized as in print.

## 4 Graphing Calculator Screens

- 4.1 **3 Screen indicator** 
  - **Opening screen line**
  - Closing screen line

For the box in print that shows a calculator screen with data in it, use the transcriber-defined shape indicator and "gcs" for "graphing calculator screen" followed after a space on the same line by an opening screen line across the width of the page. On the line following the end (bottom) of the screen, insert a closing screen line.

......

- 4.2 The graphing calculator screen uses the full width of the braille page.
- 4.3 A screen requires a blank line before and after it except following an accompanying heading or caption or preceding a source citation.
- 4.4 Keep the data shown on a screen together on the same braille page if possible.
- 4.5 If a screen is numbered, insert the number after the screen indicator with a blank cell on either side of the number.

## 5 Material within the Screen

- 5.1 Use contractions within a screen.
- 5.2 Start and stop text lines as they are shown in print.
- 5.2.1 Lines that are indented on the screen are indented two cells to the right of the beginning of the previous print line.
- 5.2.2 Lines that are right-justified on the screen are transcribed four cells to the right of the beginning of the previous line. Right-justified expressions are

answers to calculator commands. A long expression on a small screen may appear to be both left- and right-justified. The transcriber must decide from accompanying text if it is an answer to be transcribed as rightjustified.

- 5.2.3 Where two or more consecutive lines are right-justified, each line will begin in the same cell.
- 5.2.4 Where word(s) or equation(s) are left- and right-justified on the same line, they are transcribed on the same line with three blank cells before the right-justified material.
- 5.2.5 Runovers are transcribed on the line below, indented one cell to the right of the beginning of the previous line.
- 5.4 Omit font indicators other than highlighting on text within a screen but retain print capitalization.
- 5.5 Symbols are not inserted to replace blank spaces in print.
- 5.6 When items in a horizontal list consist of two or more words, two spaces are inserted between each item.
- 5.7 Hyphens across columns are replaced with dot 5s in braille. (See Sample 3) A note on the Transcriber's Notes page explains the change to print. The note is placed at the site if this situation occurs only once in the document.
- 5.8 Horizontal lines separating sections of the screen run the width of the page. (See Samples 3 and 7)
- 5.9 Matrices are transcribed and aligned according to *UEB Guidelines for Technical Material*, Section 15.
- 5.9.1 If big (multi-line) grouping signs are not used on the screen in print, use regular parentheses, brackets, etc. A blank line is not inserted preceding and following the matrix because it is not a spatial arrangement.
- 5.9.2 If big (multi-line) grouping signs are used on the screen in print, big (multi-line) grouping signs are used in braille; a blank line is required preceding and following the matrix (a spatial arrangement), except immediately following an opening screen line or preceding a closing screen line.

- 5.10 Arrows, arrowheads, and comparison signs in screens are spaced away from surrounding text as in *UEB Guidelines for Technical Material*, Section 13. A space is inserted following a colon except when the colon applies to the following letter or word.
- 5.11 Necessary transcriber's notes are placed either before or after the screen, not within the screen.
- 5.12 Function tabs shown on the menu bar in the screen are not included in the braille unless they are highlighted for a particular reason.
- 5.13 A number following a solid cursor (represented in braille by a transcriberdefined shape indicator followed by a full cell) requires a numeric indicator.
- 5.14 All symbols specific to the graphing calculator must be listed on the Special Symbols page.

## 6 Exceptions to UEB Code Rules

In some situations exceptions to the Rules of UEB will be applied. These exceptions should be noted on the Transcriber's Notes page as outlined below. The note is placed at the site if this situation occurs only once in the document. (Sample transcriber's notes are shown in italics.)

6.1 The numbers in items like Y1 ..., L1 ..., Plot1 ..., etc. are all identifiers. The limitations of the graphing calculator cause variations in type size and placement; (e.g., subscripts are not always shown as subscripts). In braille all these identifier numbers are shown as subscripts, whether following a letter or a word.

This variation should be qualified in a transcriber's note on the Transcriber's Notes page, stating the limitations and variations that appear in the various screens.

**Suggested TN:** In the presentation of Graphing Calculator material, print type size variations and subscripts may not be shown. In braille all identifier numbers in items like L1, L2, ..., Y1, Y2, ..., Plot1, Plot2, ..., etc., are shown as subscripts.

6.2 For the keystroke that shows Y=, no space is left before or after the equal sign.

**Suggested TN:** In the presentation of Graphing Calculator material, no space is left before or after the equal sign in the Y= keystroke.

6.3 Blank lines are not inserted unless a blank line is shown on the calculator screen. This includes blank lines before and after a matrix not shown in big (multi-line) grouping symbols. Exceptions: Blank lines are inserted when a matrix is shown in big (multi-lined) grouping symbols. (See this Guideline, 5.9.1 and 5.9.2). When another screen is shown within a calculator screen, a blank line separates the screens.

## 7 Graphs

- 7.1 Calculator screens in print showing the graph lines can be done as a tactile drawing. If the calculator screen representation is a copy of an original print graph already shown previously in the text, the calculator screen representation may be omitted in braille. Indicate the omission with a transcriber's note at the point of omission.
- 7.2 When doing the tactile drawing of the graphing calculator screens:
- 7.2.1 Make the outline of the box that indicates the screen very faint
- 7.2.2 Be accurate with the intersection of graph lines and the axes and with the points on the lines
- 7.2.3 Be consistent and even with scale marks on the axes
- 7.2.4 Do not insert grid lines that are not shown in print
- 7.2.5 Refer to the latest edition of *Guidelines and Standards for Tactile Graphics*.

## SYMBOLS FOR GRAPHING CALCULATORS

The following symbols appear in the text and within graphing calculator screens. The first group of symbols (Section 8) should be listed on the Special Symbols page. The symbols of the second group (Section 9) do not necessarily have to be listed; inclusion may be an agency decision.

## 8 Symbols Listed on the Special Symbols Page:

8.1 General Symbols

Graphing calculator screen indicator

- Highlight indicator placed before a word(s), numeral(s) or group of symbols highlighted on the screen. The effect of the highlight indicator is terminated by a space.
- 8.2 Calculator keystroke symbols (cursor indicators found in narrative). (See Sample 1)

  - (transcriber-defined solid shape indicator, rightpointing arrowhead)
  - (transcriber-defined solid shape indicator, leftpointing arrowhead)
- 8.3 Symbols found within calculator screens:
  - Right-pointing arrowhead
  - ◄ ∴ ∷ ∴ ∴ Left-pointing arrowhead

  - Downward-pointing arrowhead
  - Solid cursor, either vertical bar, rectangle, or underline cursor (grade 1 indicator, full cell)
  - ? **Here** Question mark

Do not use any of the two-cell symbols for arrows listed in GTM §13.1

8.4 Graph line styles (these symbols must be followed by a space):

•.		dotted line
$\backslash$		thin line
$\mathbf{N}$		thick line
		line with shading above
		line with shading below
-0	:::::::::::::::::::::::::::::::::::::::	circle with small horizontal line adjacent and to the left: path, line of graph
0		circle without small horizontal line in front; animate, animates or traces the edge of a graph without drawing a path or line

8.5 Graph Types

Plot Type

- Scatter
- L\_\_\_\_ xyLine
- Histogram
- ModBoxplot
- Boxplot
- NormProbPlot

When symbols for the graph types above appear in a screen, the name of the graph type used is enclosed in curly braces. Do not try to develop new symbols; do not draw them as tactile diagrams. (See Sample 12.)

**Suggested TN:** When symbols for the graph types appear in a screen, the name of the graph type used is enclosed in curly braces.

#### Symbols Not Listed on the Special Symbols Page 9

The symbols below are examples from this document that would need to be listed on the Special Symbols page.

	· • • • • · •	Shape terminator
Δ		Capital Greek delta
θ	· • • • • • • •	Lower-case Greek theta
Σ		Capital Greek sigma
σ	· • • • · • · • · • · • · • · • · • · •	Lower-case Greek sigma
←	· • • • • • • · · · · · •	Left-pointing arrow with shaft
$\rightarrow$		Right-pointing arrow with shaft (do not use the two-cell symbol for a simple right pointing arrow)
<b>↑</b>		Up-pointing arrow with shaft
$\downarrow$		Down-pointing arrow with shaft
		Hollow box
•		Solid box
*		Parallelogram representing a solid diamond shape
*		Asterisk, meaning multiplication
		Decimal point, period
•		Dot multiplication sign
ſ	· • • • • •	Integral
!	· • • • • •	Factorial
✓		Check mark
^	· • • • · • • · · · •	Caret (hat)

Caret (hat)

# SAMPLES

## Sample 1

To turn on the calculator, press ON. Some information may appear on the screen. In order to clear everything press: 2nd + 2. Press 2nd + 32. At this point the screen is cleared but the cursor is also lost. Press 2nd and hold the  $\checkmark$  key until the screen darkens and the cursor reappears.

The message "MEM CLEARED" will appear on the screen.

The display screen and the memory are now clear and ready for use.

Example 4: Y= • • 2 X/T + 3 GRAPH

What changed when you graphed Example 4? Why?

```
1
2
3
4
5
6
7
    8
    •:•:
9
10 .....
11
12
13
14
15
16
17
18
19
20
21
22
```

Line 4: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. (Graphing Calculator Guidelines [GC] GC 2.2).

Lines 6 and 7, 18-20: No spaces are inserted between keystrokes (GC 2.5).

Line 10: Up arrowhead within a keystroke (GC 8.2).

Line 12: Retain quotes and full capitalization. The words MEM CLEARED will be replicated in a screen and should be transcribed in surrounding text as in the screen (GC 3).

Lines 18-20: A division may be made between keystrokes but not within a keystroke construction (GC 2.5.3).

Line 18: For the keystroke that shows Y=, there is no space before or after the equal sign (GC 6.2).

Line 20: Retain fully capitalized words in keystroke commands (GC 2.3).

### 11. Calculator Notes

Some calculators, like the TI-83, handle operations with complex numbers. Press [MODE] and set the calculator as shown below left. Get to the home screen and enter the operation you wish to perform. Note that i is accessed by pressing [2nd]. Press [ENTER] to obtain your answer. The screen, below center, shows the result of (5 - 2i)(4 + 9i). Remember that you can convert decimal values to fractional values by pressing [MATH], [ENTER] ENTER]. You would want to do this when simplifying a question like 3 + i 4 - 5i.

See the screen below right.

Normal Sci Eng Float 0123456789 Radian Degree Func Par Pol Seq Connected Dot Sequential Simul Real a+bi re^θ <i>i</i>	(5-2 <i>i</i> )(4+9 <i>i</i> ) 38+37 <i>i</i>	(3+ <i>i</i> )/(4-5 <i>i</i> ) .1707317073+.46 Ans⊳Frac 7/41+19/41 <i>i</i>
Real <mark>a+bi</mark> re^∂ <i>i</i> <mark>Full</mark> Horiz G-T		

1		
2		
3		
4		
5		
6		
7	•	
8	••	
9		
10		•
11		
12		
13		••
14	• • • • • • • • • • • • • • • • • •	
15		
16		
17		
18		:
19		

Lines 7, 12, and 19: Embedded transcriber's note clarifying the location of the three screens.

Line 10: No contractions are used in words within keystroke commands (GC 2.4).

Line 16: No spaces are inserted between keystrokes or between items within keystrokes, unless they are separated by commas in print (GC 2.5). It is preferable to keep keystrokes on one line if possible (GC 2.5.2). Retain full capitalization on words in keystroke commands (GC 2.3). No contractions are used in words within keystroke commands (GC 2.4).

Line 6: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. (GC 2.2). Retain fully capitalized words in keystroke commands (GC 2.3).

Lines 1, 12 and 17: Opening screen line (GC 4 and GC 4.1).

- Lines 2-9: Highlighting is indicated with the transcriber-defined typeform word indicator, ∷ (GC 5.3).
- Line 3: The digits 0, 1, 2, etc., are spaced from each other because each can be highlighted separately as a choice by the user.
- Lines 2, 5, 6, 7, 8: Contractions are used in words within a calculator screen (GC 5.1)
- Line 8: Caret and Greek lower-case theta (GC 9).
- Line 9: Grade one mode indicators are needed on the letters G-T on either side of the hyphen as required by the UEB Code with regard to single letters.
- Lines 10, 15, 22: Closing screen line (GC 4 and GC 4.1).
- Lines 11, 16: Blank lines are required (GC 4.3)
- Lines 14, 19, 21: Right-justified lines are transcribed four cells to the right of the beginning of the previous line (GC 5.2.2).
- Line 20: Right-pointing arrowhead within a calculator screen (GC 8.3). Arrowhead in screens is spaced away from surrounding text (GC 5.10)

L1	Γ2	L3								
131										
114										
167										
180										
126										
134										
188										
L1(7)=188										

1																· · · · •		••••	•••	•••	• · • · • ·	•••		· • · •	••														• :	•••	
2																																									
3	•	•		•••	•		::	::	::	::	::	::	::	::	:::	::	::	::	::	::	::	::	:::	::	::	::	::	::	::	::	::	::	::	::	::	::	::	::	::	::	
4	· · · · •	•••	•	•		• •				· · · · ·	• · • · • ·	 :•	• • • •		•			: : : •	•••	 :•	•••	 	••																		
5	:•	••	•••	•••	••	••	••			:• :•	••	••	••	••	••			•	••	••	••	••	••																		
6		•	•••	•						:. :•	•	•	•	•	•			•	•	•	•	•	•																		
7		• •	•••••••••••••••••••••••••••••••••••••••	•••																																					
8		•	•••																																						
9		• •	•••																																						
10		•	•	•																																					
11		• •	•••	•••																																					
12	•		•		•	•••	•••																																		
13	•	••	•••	•••	•••	•••	••	••	••	••	••	••	••	••	••	••	••	••	••	••	••	••	••	••	•••	••	••	••	••	••	••	•••	••	••	••	••	••	•••	••	••	
14	· · · · •	•	•	•		• •	:•	• •			•	· • • •		•	:::		· • • •	• :	•••	•••																					
15							•••		•••	•••			•••	•••	•••		•••		•••	•••		•••	•••	•••			•••	•••	•••	•••	•••	•••		•••	•••	•••		•••	::	•••	

Line 3: Opening screen line (GC 4 and GC 4.1).

Line 4: Identifiers are transcribed as subscripts (GC 6.1).

Line 6: Hyphens across a column are replaced with guide dots (GC 5.7).

Line 12: The number 188 is highlighted in the screen in print.

Line 13: A separation line is inserted between the table and the final expression, as shown in print. The separation line is the width of the braille page (GC 5.8).

Line 14: A space is inserted on either side of a comparison sign (GC 5.10).

Line 15: Closing screen line (GC 4 and GC 4.1).

Follow the same procedure to enter the value of "b'' and the value of "c''. When the values for "a'', "b'', and "c'' have been entered, the first screen in the second row below appears. This screen tells us that one root is  $3 \ 4 \ + \ 2 \ 5 \ i$ , and asks us to press ENTER to view the other root. Doing so results in the second screen in the second row below. This screen tells us that the other root is  $3 \ 4 \ - \ 2 \ 5 \ i$ .



### 3. Solving Graphically With A Graphing Calculator

Provided the quadratic equation has real roots, the equation can be solved graphically. Shown below is the graph of the quadratic function  $y = x \ 2 \ -x - 12$ . If we are trying to solve the equation  $x \ 2 \ -x - 12 = 0$ , then we merely need to examine the graph of  $y = x \ 2 \ -x - 12$ , and determine the *x*-intercepts--the *x*-coordinates of the points on the graph where *y* is 0. Clearly if we can find the *x* values for which *y* is 0, then we have found the *x* values for which  $x \ 2 \ -x - 12 = 0$ .

The graph of  $y = x \ 2 \ -x - 12$  is drawn using the window created by pressing Z00M 6 as shown below.

Y1 = X^2 - X - 12	ZOOM MEMORY
Y2 =	1:ZBox
Y3 =	2:Zoom In
Y4 =	3:Zoom Out
Y5 =	4:ZDecimal
Y6 =	5:ZSquare
Y7 =	<b>5:</b> ZStandard
Y8 =	7↓ZTrig
Y8 =	7↓ZTrig

```
1
2
3
4
5
7
8
9
11
12
13
14
15
16
18
19
20
21
22
23
24
25
```

Line 5: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close (GC 2.2). Retain fully capitalized words in keystroke commands (GC 2.3). No contractions are used in words within a keystroke indicator (GC 2.4).

Line 7: Embedded transcriber's note explaining the location of screen.

- Lines 10, 17: Opening screen line (GC 4 and GC 4.1).
- Lines 11, 13, 18, 20, 22: Retain fully capitalized words within screens (GC 5.4).
- Lines 12, 14, 19, 21, 23: Question mark preceded by a Grade 1 indicator (GC 8.3).
- Lines 9, 16, 25: Blank lines are required (GC 4.3).

Lines 15 and 24: Closing screen line (GC 4 and GC 4.1).

```
2
3
 4
 5
 ••••
6
7
8
10
11
12
 13
14
 15
 •
16
17
18
19
20
21
22
23
24
25
```

Lines 1 and 11: Opening screen line (GC 4 and GC 4.1).

Line 2: Retain fully capitalized words (GC 5.4) and use contractions within a screen (GC 5.1).

Line 3: Right-justified in print. Begins four cells to the right of the line above (GC 5.2.2).

Lines 5 and 6: Right-justified in print. Begins four cells to the right of the line above (GC 5.2.2). Two

consecutive right-justified lines are transcribed beginning in the same cell (GC 5.2.3).

Lines 7 and 8, 17-19: Start and stop text lines as they are shown in print (GC 5.2). Retain fully capitalized words (GC 5.4) and use contractions within a screen (GC 5.1).

Lines 9 and 20: Closing screen line (GC 4 and GC 4.1).

Lines 10 and 21: Blank line is required (GC 4.3).

Line 17: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. (GC 2.2). No spaces are inserted between keystrokes (GC 2.5).

Lines 1 and 12: Opening screen line (GC 4 and GC 4.1). Line 1: A top box line can appear on line 1 when a running head is not used (BF). Line 2: The equal sign is highlighted in the calculator screen in print. Lines 2-9: Identifiers are transcribed as subscripts (GC 6.1). Lines 3-9: Symbols are not inserted to replace blank spaces in print (GC 5.5).

- Lines 10 and 21: Closing screen line (GC 4 and GC 4.1).
- Lines 11 and 22: A blank line is required (GC 4.3).
- Line 13: "ZOOM" is highlighted in print (GC 5.3). Retain full capitalization (GC 5.4).
- Lines 14-20: Retain print capitalization (GC 5.4) and use contractions within a screen (GC 5.1).
- Line 19: "6:" is highlighted in print (GC 5.3).
- Line 20: Down-pointing arrow with shaft (GC 9).

To find the matrix product 01, press [MATRIX], 1,  $\times$ , [MATRIX], 2, ENTER. The following screens result.



To square matrix D, press [MATRIX], (4, (h), (2), (ENTER). The following screens result.

[D]^2	[D]^2 [[14 16 18] [-26 -31 -36]
	[38 46 54 ]]

#### 3. To Store A Result

If we wish to store the result of  $D^2$ , and we already have the answer to  $D^2$ , as in the screen below left, simply press [STO\*], [MATRIX], [5], [ENTER] which results in the screen below left. Of course we chose matrix E as the place to store the answer to  $D^2$ , because E was not currently being used for any other purpose. To see if matrix E really does contain the result of  $D^2$ , press [MATRIX], [5], [ENTER]. This results in the screen below right and confirms that E now does hold the answer to  $D^2$ .

[[14 16 18 ]	[[14 16 18 ]
[-26 -31 -36]	[-26 -31 -36]
[38 46 54 ]]	[38 46 54 ]] [E]
[[14 16 18 ]	[[14 16 18 ]
[-26 -31 -36]	[-26 -31 -36]
[38 46 54 ]]	[38 46 54 ]]

6. Converting From Decimal To Fractional Form Whenweaskthe calculator to determine the value of 3/4 - 2/5 - 7/10 1/2 = 1 0 - 4 3 3/5 - 2, it gives the result with decimal values (below left).

The three dots indicate that part of the answer matrix cannot be seen on the screen. By using the right arrow key we can see the other entries (below center and right).

[A][B] [[5333333333] [.8	
[,0	

[A][B]	
24	-1.86666
. 3	1.8

[A][B]	
1.866666667	]
1.8	]]

```
1
2
3
4
5
6
7
8
9
10
11
12
13
14
  15
16
17
18
19
20
21
22
23
24
25
```

Lines 4 and 5, 19 and 20: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. In this example, brackets indicate keystrokes. Keystrokes are spaced because they are separated by commas (GC 2.5). Retain fully capitalized words in keystroke commands (GC 2.3). Use no contractions in words within a keystroke (GC 2.4).

Lines 7, 11, 17, and 22: Blank lines are required (GC 4.3).

Lines 8, 12, and 23: Opening screen line (GC 4 and GC 4.1).

Lines 9 and 13: The asterisk is a multiplication sign.

Lines 10, 16, and 25: Closing screen line (GC 4 and GC 4.1).

Lines 14 and 15: This is a right-justified matrix in print and is indented four cells (GC 5.2.2). Big (multi-line) grouping signs are *not* used in print so each line of "text" is transcribed as a separate line and *no* blank lines before and after are required (arrangement is *not* spatial) (GC 5.9.1). Lines 19 and 24: Caret.

Line 1: Opening screen line (GC 4 and GC 4.1).

Line 2: Caret.

Lines 3-5: This is a right-justified matrix in print and is indented four cells (GC 5.2.2).

Big (multi-line) grouping signs are *not* used in print so each line of "text" is transcribed as a separate line and no blank lines before and after are required (arrangement is *not* spatial) (GC 5.9.1).

Line 6: Closing screen line (GC 4 and GC 4.1).

Line 7: A blank line is required (GC 4.3).

Lines 12 and 13: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. In this example, brackets indicate keystrokes (GC 2.1 and GC 2.2). Keystrokes are spaced because they are separated by commas (GC 2.5). Retain fully capitalized words in keystroke commands (GC 2.3). Use no contractions in words within a keystroke (GC 2.4).

Line 12: Transcriber-defined right-pointing arrowhead (GC 8.2).

Lines 14, 20, and 21: Embedded transcriber's note explaining location of screen.

```
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```

Lines 1 and 11: Opening screen line (GC 4 and GC 4.1).
Line 1: A top screen line can appear on line 1 when a running head is not used (BF).
Lines 2-4, 6-8, 12-14, and 16-18: These are right-justified matrices in print and are indented four cells (GC 5.2.2). Big (multi-line) grouping signs are not used in print so each line of "text" is transcribed as a separate line and no blank lines before and after are required (arrangement is not spatial) (GC 5.9.1).
Line 5: Right-pointing arrow with shaft (GC 9).
Lines 9 and 19: Closing screen line (GC 4 and GC 4.1).

Lines 1 and 2: This is a matrix within text and big (multi-line) grouping signs are used. This spatial arrangement requires a blank line before and after (GC 5.9.2).

Lines 7 and 11: Embedded transcriber's note explaining location of screen.

```
2
               3
                     4
                                                                     6
 8
 9
                 10
                 •••••
                                  12
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22
23
24
                                                                                                                25
```

Lines 1, 7 and 13: Opening screen line (GC 4 and GC 4.1). A top screen line can appear on line 1 when a running head is not used (BF).

Lines 3-4, 9-10 and 15-16: This matrix is the rest of the answer to the multiplication of [A][B] and is rightjustified in print. It begins four cells to the right of the beginning of the line above (GC 5.2.2). The matrix is terminated with closing brackets on the last screen. Big (multi-line) grouping signs are not used in print (GC 5.9.1).

Lines 5, 11, and 17: Closing screen line (GC 4 and GC 4.1).

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \rightarrow [A]$$

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 & 5 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 & 5 \\ 7 & 8 \end{bmatrix} \rightarrow [B]$$

$$\begin{bmatrix} 1 & 2 & 5 & 6 \\ 3 & 4 & 7 & 8 \end{bmatrix}$$

```
1
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7
8
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17
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19
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22
23
24
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```

Lines 2, 10, and 21: A blank line is required (GC 4.3).

- Lines 3 and 11: Opening screen line (GC 4 and GC 4.1).
- Lines 4 and 5, 15 and 16: Matrices are transcribed and aligned according to UEB Guidelines for Technical Materials, Section 15, (GC 5.9). Big (multi-line) grouping signs are used. This spatial arrangement requires a blank line before and after (GC 5.9.2).
- Lines 4 and 15: Right-pointing arrow with shaft (GC 9).
- Line 6: The matrices are spatial and require blank lines before and after except immediately following an open screen line or preceding a closing screen line (GC 5.9.2).
- Lines 7 and 8: This matrix is the answer [A] and is right-justified in print. It begins four cells to the right of the beginning of the line above (GC 5.2.2). Big (multi-line) grouping signs are used (GC 5.9.2).
- Lines 9 and 20: Closing screen lines (GC 4 and GC 4.1).
- Lines 12 and 13: This matrix is the answer [A] (repeated from the previous screen).
- Lines 14 and 17: Blank lines are required (GC 5.9.2).
- Lines 18 and 19: This matrix is the answer [B] and is right-justified in print. It begins four cells to the right of the beginning of the line above (GC 5.2.2). Big (multi-line) grouping signs are used (GC 5.9.2).

```
1
 2
 3
 4
5
6
7
 8
9
10
11
 12
   13
14
15
16
17
18
19
20
21
22
23
24
        25
```

Lines 1-4: This is a transcriber's note explaining the omission of the partial matrix at the top of the screen. Line 5: A blank line is required (GC 4.3).

Line 6: Opening screen line (GC 4 and GC 4.1).

Lines 7 and 8: This matrix is the answer [B] (repeated from the previous screen) and is right-justified in print. It begins four cells to the right of the beginning of the line above (GC 5.2.2). Big (multi-line) grouping signs are used (GC 5.9.2).

Lines 9 and 11: The matrices are spatial and require blank lines before and after except immediately following an open screen line or preceding a closing screen line (GC 5.9.2).

Line 10: Contractions can be used within a screen (GC 5.1). "augment" is a command (similar to a function) and requires a space following it.

Lines 12 and 13: This matrix is the answer to "augment <[A], [B]>", is right-justified in print and begins four cells to the right of the beginning of the line above (GC 5.2.2).

Line 14: Closing screen line (GC 4 and GC 4.1).

1.
Y1 <b>=</b> 1000000(0.999
9)^(12X)
Y2 =
ҮЗ=
Y4 =
Y5=
Υ6=
Y7=

2.	
TABLE SETUP	
TblMin=0	
∆ТЬІ=1	
Indpnt: Auto	Ask
Depend: Auto	Ask

3.		
X	Y1	
0	1E6	
1	998801	
5	997603	
3	996406	
4	995211	
5	994018	
6	992826	
X=0		

Lines 3 and 14: Opening screen line (GC 4 and GC 4.1). Screen number is inserted into the opening screen line (GC 4.5).

- Line 4: The equal sign is highlighted in the calculator screen in print.
- Lines 4 and 6-11: Identifiers are transcribed as subscripts (GC 6.1).
- Lines 4 and 5: Start and stop text lines as they are shown in print (GC 5.2).
- Line 5: The numeric indicator is required at the beginning of a braille line. Caret (GC 9).
- Lines 6-11: Symbols are not used to replace blank spaces shown in print (GC 5.5).
- Lines 12 and 20: Closing screen line (GC 4 and GC 4.1).
- Lines 13 and 21: A blank line is required (GC 4.3).

Line 15: Retain print capitalization (GC 5.4).

Lines 16, 18 and 19: Use contractions within a screen (GC 5.1).

Line 17: Uppercase Greek delta.

Lines 18 and 19: The word "Auto" is highlighted on both lines.

Line 1: Opening screen line (GC 4 and GC 4.1). A top box line can appear on line 1 when a running head is not used (BF). Screen number is inserted into the opening screen line (GC 4.5).

- Line 2: Identifiers are transcribed as subscripts (GC 6.1).
- Line 4: The number 0 is highlighted in the calculator screen in print.
- Lines 2-12: The table is formatted according to Braille Formats guidelines.
- Lines 4-10: The numbers in the second column are left-justified as in print.
- Line 11: A separation line is inserted between the table and the final expression, as shown in print. The separation line is the width of the braille page (GC 5.8).
- Line 12: An empty cell is inserted before and after the comparison sign (GC 5.10).
- Line 13: Closing screen line (GC 4 and GC 4.1).

If you are using a TI-83 calculator, the steps are similar. The screen by screen displays are shown below. Access *n* using the  $[X,T,\Theta,n]$  key.

1.



Line 6: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. (GC 2.1 and GC 2.2). No Grade 1 indicators are used within a keystroke (GC 2.4 and GC 2.5.2).

Lines 7 and 18: A blank line is required (GC 4.3).

- Line 8: Opening screen line (GC 4 and GC 4.1). Screen number is inserted in the opening screen line following the screen indicator (GC 4.5).
- Lines 9-16: Highlighted terms or numbers on the screen are indicated. (GC 5.3).

Line 10: The digits 0, 1, 2, etc. are spaced from each other because each can be highlighted separately as a choice by the user.

Lines 9 and 12-15: Contractions are used in words within a calculator screen (GC 5.1).

Line 15: Caret and Greek lower-case theta.

Line 16: Grade 1 mode is needed on the letters G-T on either side of the hyphen as required by *Rules of UEB* with regard to single letters.

Line 17: Closing screen line (GC 4 and GC 4.1).

...... 

Line 1: Opening screen line (GC 4 and GC 4.1). Screen number is inserted in the opening screen line following the screen indicator (GC 4.5).

- Line 2: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1).
- Lines 3, 5, 7 and 9: Lines that are indented on the screen are indented two cells to the right of the beginning of the previous print line (GC 5.2.1).
- Lines 4-5: The equal sign is highlighted (GC 5.3).
- Lines 4, 6 and 8: Lines begin in cell 1 with the dotted line graph style symbol. This symbol must be followed by a space (GC 8.4).
- Lines 5-9: Symbols are not used to replace blank spaces shown in print (GC 5.5).
- Line 10: Closing screen line (GC 4 and GC 4.1).

(Sample from TI-84 Manual)

1. Press MODE. Press • • • ENTER to select **Par** mode. Press • • • ENTER to select **Simul** for simultaneous graphing of all three parametric equations in this example.

NORMAL	SCI	ENG	ì
FLOAT	01234	5678	9
RADIAN	DEGR	EE	
FUNC 🖪	AR P	OL	SEQ
CONNECT	ED DO	Τ	
SEQUENT	IAL	SIMU	IL.
REAL a	+b <i>i</i>	ге^Ө	ź
FULL H	ORIZ	G-T	
	↓NE	XT↓	

2. Press ▼ ▼ ▼ ▼ ▼ ▼ ► ENTER to go to the Format Graph screen. Press ▼ ▼ ▼ ► ENTER to select **AxesOff**, which turns off the axes.

↑BACK↑
MATHPRINT CLASSIC
n/d Un/d
ANSWERS: AUTO DEC FRAC
STHTWIZHRDS:UN UFF
SETCLOCK <mark>09/02/1010:41HM</mark>
ReptCO PolacCC
RectGC PolarGC
RectGC PolarGC CoordOn CoordOff
RectGC PolarGC CoordOn CoordOff GridOff GridOn
RectGC PolarGC CoordOn CoordOff GridOff GridOn AxesOn AxesOff
RectGC PolarGC CoordOn CoordOff GridOff GridOn AxesOn AxesOff LabelOff LabelOn
RectGC PolarGC CoordOn CoordOff GridOff GridOn AxesOn AxesOff LabelOff LabelOn ExprOn ExprOff
RectGC PolarGC CoordOn CoordOff GridOff GridOn AxesOn AxesOff LabelOff LabelOn ExprOn ExprOff

- Plot1 Plot2 Plot3 ∴X1T=30Tcos(25°) Y1T=30Tsin(25°) ► ∴X2T= Y2T= `.X3T=
- 3. Press Y=. Press 30 X,T,O,n COS 25 2nd [ANGLE]
  1 (to select °)
   ENTER to define X1T in terms of T.
- 4. Press 30 X,T,Θ,n SIN 25 2nd [ANGLE] 1 ) ALPHA [F1]
  1 (to select n/d)
  9.8 ▶ 2 ▶ X,T,Θ,n x<sup>2</sup> ENTER to define Y1T.

```
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2
3
  Δ
5
      6
      7

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21 .....
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                                                                         25
```

- Line 5: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. Retain capitalization (GC 2.1, GC 2.2 and GC 2.3).
- Lines 6-7: No spaces are left between keystrokes or between items within keystrokes, unless they are separated by commas in print (GC 2.5). Down-pointing arrowheads and right-pointing arrowheads in keystrokes (GC 8.2).
- Lines 7 and 10: **Par** and **Simul** are emphasized and replicate a word appearing in a screen. Transcribe as they appear in the screen and the emphasis is retained (GC 3).
- Lines 8 and 9: Down-pointing arrowheads and right-pointing arrowheads in keystrokes (GC 8.2).
- Lines 12 and 24: A blank line is required (GC 4.3).
- Line 13: Opening screen line (GC 4 and GC 4.1).
- Lines 14-21: Highlighted terms or numbers on the screen are indicated (GC 5.3).
- Line 15: The digits 0, 1, 2, etc., are spaced from each other because each can be highlighted separately as a choice by the user.
- Lines 14 and 17-20: Contractions are used in words within a calculator screen (GC 5.1).
- Line 20: Caret and Greek lower-case theta.
- Line 21: Grade 1 mode is needed on the letters G-T on either side of the hyphen as required by *Rules of UEB* with regard to single letters.

Line 22: The word "NEXT" and the down-pointing arrows with shafts are centered as in print. Line 23: Closing screen line (GC 4 and GC 4.1).

```
1
     2
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16
17 .....
18
19 .....
20
21
22
23
24
25
```

Lines 1-3: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close.

Retain capitalization (GC 2.1, GC 2.2 and GC 2.3). Down-pointing arrowheads and right-pointing arrowheads in keystrokes (GC 8.2). Use no contractions in words within keystroke symbols (GC 2.4). Line 7: Retain the emphasis on **AxesOff** and use contractions. The word is replicated in a later screen (GC 3).

Lines 8 and 20: A blank line is required (GC 4.3).

Line 9: Opening screen line (GC 4 and GC 4.1).

Line 10: The word "BACK" and the up-arrows with shafts retain their centered position.

Lines 11-18: Highlighted terms or numbers on the screen are indicated (GC 5.3). Retain print capitalization (GC 5.4) and use contractions within a screen (GC 5.1).

Line 18: This line is the runover of Line 17. Runovers are indented two cells to the right of the beginning of the previous line (GC 5.2.5).

Line 19: Closing screen line (GC 4 and GC 4.1).

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16
17
18
19
20
21
22
23
24
25
```

- Line 1: Opening screen line (GC 4 and GC 4.1). A top box line can appear on line 1 when a running head is not used (BF).
- Lines 2-7: Highlighted terms or numbers on the screen are indicated (GC 5.3). Retain print capitalization (GC 5.4) and use contractions within a screen (GC 5.1).
- Line 8: Closing screen line (GC 4 and GC 4.1).

Line 9: A blank line is required (GC 4.3).

- Line 10: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. Follow capitalization (GC 2.1, GC 2.2 and GC 2.3). For the keystroke that shows Y=, no space is left before or after the equal sign (GC 6.2).
- Lines 11 and 16: No spaces are left between keystrokes or between items within keystrokes unless they are separated by commas (GC 2.5). No Grade 1 indicators are used within keystrokes (GC 2.4).
- Line 12: The word ANGLE in brackets is a keystroke so it is unspaced from the keystroke before it (GC 2.5).
- Line 14: **X1T** and **T** are emphasized in print and are replicated in a screen (GC 3). **1T** is a subscript of **X**.
- Line 22: Y1T is emphasized in print and is replicated in a screen (GC 3). 1T is a subscript of Y.

10 ..... 

Line 1: Opening screen line (GC 4 and GC 4.1). A top box line can appear on line 1 when a running head is not used (BF).

Line 2: The identifying numbers on Plot in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1).

Lines 2, 5 and 9: Lines indented on the screen are two cells to the right of the beginning of the previous line (GC 5.2.1).

Lines 3, 8 and 10: Line styles are at the left margin and are spaced from the expressions that follow (GC 8.4).

Lines 4 and 7: Horizontal lines separating sections of the screen run the width of the page (GC 5.8).

Line 6: Right-pointing arrowhead is left-justified in the print screen. Transcription begins four cells to the right of the beginning of the line above (GC 5.2.2).

Lines 8-10: Symbols are not inserted to replace blank spaces in print (GC 5.5).

Line 11: Closing screen line (GC 4 and GC 4.1).

In Exercise 51–54, use the Y= screen to write the equation being solved. Then use the table to solve the equation.

51.	Plot ∙.Y1∎ •.Y2■			
	• Y3=	X	Y1	Y2
	• Y4=	-3	-21	24
	. v=_	-2	-18	18
	1.12=	-1	-15	12
	• Y6=	Ø	-12	6
	• Y7=	1	-9	0
	• * *	2	-6	-6
		3	-3	-12
		X=-3	·	

Line 3: For the keystroke Y=, no space is left before or after the equal sign (GC 6.2).

Lines 3-6: Text should be blocked in cell 5 (BF 10.3).

Lines 7-11: Transcriber's note explaining the overlapping calculator screens.

Lines 13 and 19: A blank line is required (GC 4.3).

Line 14: Opening screen line (GC 4 and GC 4.1).

Line 15 The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1).

Lines 16 and 17: Line styles are at the left margin and are spaced from the expressions that follow (GC 8.4). The equal signs are highlighted in print (GC 5.3).

Line 18: Closing screen line (GC 4 and GC 4.1).

```
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   3 .....
   • • • • • • • • •
     • • • • • • • •
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   7
   8
9
   10
12
14
15
16
17
18
19
20
21
22
23
24
25
```

Line 1: Opening screen line (GC 4 and GC 4.1). A top box line can appear on line 1 when a running head is not used (BF).

Line 2: The identifiers are transcribed as subscripts (GC 6.1).

Line 4: The -3 is highlighted (GC 5.3).

Lines 4-10: Entries are left-justified in the columns as in print.

- Line 11: The separation line is the width of the braille page (GC 5.8).
- Line 13: Closing screen line (GC 4 and GC 4.1).

The horizontal component vector is defined by  $X_{3T}$  and  $Y_{3T}$ .

- 6. Press VARS → 2, and then press 1 ENTER to define X<sub>3T</sub>. Press
  0 ENTER to define Y<sub>3T</sub>.
- 7. Press ● ENTER to change the graph style to <sup>™</sup> for X<sub>3T</sub> and Y<sub>3T</sub>. Press ENTER ENTER to change the graph style to <sup>⊕</sup> for X<sub>2T</sub> and Y<sub>2T</sub>. Press ENTER ENTER to change the graph style to <sup>⊕</sup> for X<sub>1T</sub> and Y<sub>1T</sub>. (These keystrokes assume that all graph styles were set to <sup>•</sup> originally.)
- 8. Press WINDOW. Enter these values for the window variables.

Tmin=0	Xmin=-10	Ymin=-5
Tmax=5	Xmax=100	Ymax=15
Tstep=.1	Xscl=50	Yscl=10

9. Press [2nd [FORMAT] • • ENTER to set **AxesOff**, which turns off the axes.

Plot1 Plot2 Plot3 Y1T⊨30Tsin(25°) -9.8/2T<sup>2</sup> ∴X2T⊟0 Y2T⊟Y1T ∴X3T⊟X1T Y3T⊟0 ∴X4T=

Plot1 Plot2 Plot3 ∜X1T⊟30Tcos(25°) Y1T**⊟**30Tsin(25°) -9.8/2T<sup>2</sup> •Хат**⊟0** Y2T■Y1T \X3T**¤**X1T

WINDOW	
↑Tstep=.1	
Xmin=-10	
Xmax=100	
Xscl=50	
Ymin=-5	
Ymax=15	
Yscl=10	



- Lines 4 and 5: The identifier, 3T, is a subscript but cannot be shown as such on a graphing calculator. In braille such identifiers will be shown as subscripts (GC 6.1).
- Line 5: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. Retain capitalization (GC 2.1, GC 2.2 and GC 2.3). No spaces are left between keystrokes (GC 2.5).
- Line 7: Retain emphasis on X3T. Show 3T as a subscript to X (GC 3).
- Line 8: Retain emphasis on Y3T and show 3T as a subscript to Y (GC 3).
- Lines 9 and 20: A blank line is required (GC 4.3).
- Line 10: Opening screen line (GC 4 and GC 4.1).
- Lines 11 and 12, 15 and 17: Lines are indented on the graphing screen two cells to the right of the beginning of the line above (GC 5.2.1).
- Line 11: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1).
- Lines 12 and 14-17: Equal signs are highlighted (GC 5.3).

Lines 14, 16, and 18: Graph Line Styles are at the left margin. Each symbol is followed by a blank cell (GC 8.4).

Line 19: Closing screen line (GC 4 and GC 4.1).

- Lines 21 and 22: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close (GC 2.1, GC 2.2 and GC 2.3). No spaces are left between keystrokes (GC 2.5). Line 23: See Graph Line Styles (GC 8.4).
- Lines 23 and 24: Retain emphasis on **X3T** and **Y3T**. Show **3T** as a subscript to **X** and **Y** (GC 3).
- Line 25: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. Retain capitalization (GC 2.1, GC 2.2 and GC 2.3). No spaces are left between keystrokes (GC 2.5).

 

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Lines 1 and 5: Graph Line Styles are listed in GC 8.4.

Line 2: Retain emphasis on **X2T** and **Y2T**. Show **2T** as a subscript to **X** and **Y**.

- Lines 3 and 4: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. Retain capitalization (GC 2.1, GC 2.2 and GC 2.3). No spaces are left between keystrokes (GC 2.5).
- Lines 9 and 21: A blank line is required (GC 4.3).
- Line 10: Opening screen line (GC 4 and GC 4.1).
- Line 11: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1).
- Lines 11, 15, and 18: Lines are indented on the graphing screen two cells to the right of the beginning of the line above (GC 5.2.1).
- Line 14: Blank line shown in print (GC 6.3).
- Lines 12, 17 and 19: Graph line styles are at the margin and each symbol is followed by a blank cell (GC 8.4).
- Lines 12, 15 and 17-19: Equal sign is highlighted (GC 5.3).

Lines 15 and 16: Start and stop text lines as they are shown in print (GC 5.2). Line 20: Closing screen line (GC 4 and GC 4.1).

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#### Graphing Calculator Guidelines

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Lines 1-9: The variables are displayed as itemized material.

Lines 10 and 21: A blank line is required (GC 4.3).

Line 11: Opening screen line (GC 4 and GC 4.1).

Line 12: Retain print capitalization (GC 5.4) and use contractions within a screen (GC 5.1).

Line 13: Up-pointing arrow with shaft (GC 9).

Lines 14-19: Lines are indented on the graphing screen two cells to the right of the beginning of the line above (GC 5.2.1).

Line 20: Closing screen line (GC 4 and GC 4.1).

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Line 1: [FORMAT] is a keystroke and is unspaced from keys preceding it (GC 2.1 and 2.5).

Lines 1-3: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. Retain capitalization (GC 2.1, GC 2.2 and GC 2.3). No spaces are left between keystrokes (GC 2.5).

Line 4: **AxesOff** appears in text surrounding a screen. Emphasis must be retained and contractions can be used (GC 3 and GC 5.1).

- Lines 5 and 14: A blank line is required (GC 4.3).
- Line 6: Opening screen line (GC 4 and GC 4.1).

Lines 7-12: Highlighted terms or numbers on the screen are indicated (GC 5.3). Retain print capitalization (GC 5.4) and use contractions within a screen (GC 5.1).

Line 14: Closing screen line (GC 4 and GC 4.1).

To define a plot, follow these steps.

1. Press [2nd [STAT PLOT]. The STAT PLOTS menu is displayed with the current plot definitions.

STAT PLOTS	
1:Plot1Off	
L1 L2	•
2:Plot2Off	
Li L2	•
3:Plot30ff	
LI L2	•
4√PlotsOff	

2. Select the plot you want to use. The stat plot editor is displayed for the plot you selected.



the keystroke before it. Capitalization is retained and no contractions are used (GC 2.3, GC 2.4). Line 6: The words STAT PLOTS are transcribed contracted as they will appear in the screen (GC 3 and GC 5.1).

Lines 8 and 19: A blank line is required before and after a graphing calculator screen (GC 4.3).

- Line 9: Opening screen line (GC 4 and GC 4.1).
- Lines 10 and 11: Highlighted terms or numbers on the screen are indicated (GC 5.3). Retain print capitalization (GC 5.4).
- Lines 11, 13 and 15: The identifying numbers for *Plot* are subscripts (GC 6.1).
- Lines 12, 14 and 16: Lines indented on the graphing screen are two cells to the right of the beginning of the previous line (GC 5.2.1). The plot style is named within braces (GC 8.5).
- Line 17: Down-pointing arrow with shaft (GC 9). Follow capitalization of text and use contractions within screen (GC 5.4 and GC 5.1).
- Line 18: Closing screen line (GC 4 and GC 4.1).

 

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Line 1: This sample uses a running head.

Lines 2-4: Transcriber's note explaining use of words to describe the icons.

Lines 5 and 20: A blank line is required (GC 4.3).

Line 6: Opening screen line (GC 4 and GC 4.1).

Line 7: The identifying numbers on *Plot* in the screen are shown as subscripts. The subscript indicator must be used on a subscript to a word (GC 6.1).

Lines 7, 8, 10 and 18: Highlighted items on the screen are indicated (GC 5.3).

Lines 10-15: The plot types are named rather than drawn (GC 8.5). The list is transcribed in cell 2 as a runover to *Type* (GC 5.2.5) The names of these types are shown in braces.

Lines 10 and 15: Blank lines normally required for a list are not inserted in a graphing calculator screen unless they are shown in print (GC 6.3).

Line 19: Closing screen line (GC 4 and GC 4.1).

Solution:

Keystrokes	Screen Display
2nd QUIT	
F1 8 :Clear Home CLEAR	
◆ Y=	
CLEAR X ^ 2 ENTER	F1+ F2+ F3 F4 F5+ F6+ Tools Zoom Edit - A11 Style
CLEAR .5	vy1=x <sup>2</sup>
X ^ 2 ENTER	$y_{y2=.5 \cdot x^2}$ $y_{u3=2 \cdot x^2}$
CLEAR 2 X A 2	y4=-1.5·x <sup>2</sup> y5=
ENTER	YS(X)= Main Rad Auto Func
CLEAR (-) 1.5 X ^ 2	
ENTER	F1+ F2+ F3 F4 F5+ F6+ Tools Zoom Edit - All style
▲ ▲ ▲ 2nd F6	Yy1=x <sup>2</sup> 2HDot
2 :Dot	<pre>Yy2=.5·x<sup>2</sup> 4 Thick yy3=2·x<sup>2</sup> 5 Animate</pre>
▼ 2nd F6 1 :Line	vy4=-1.5·x <sup>2</sup> 7:Above u5= 8:Below
▼ 2nd F6 4 :Thick	Y1(X)=X^2 Main Bad Auto Func
▼ 2nd F6 1 :Line	

Line 3: Solution is transcribed as a paragraph.

Line 5: Keystrokes is a cell 5 heading.

Lines 6-18: Use the calculator keystroke indicator to open a keystroke and the termination indicator to close. Retain capitalization (GC 2.1, GC 2.2 and GC 2.3). No spaces are inserted between keystrokes (GC 2.5). Use no contractions in words within a keystroke indicator (GC 2.4). Lines 20-23: Transcriber's note explaining the omission of the menu bar tab labels.

Lines 1-2: A blank line is not left between an opening screen line and a related heading (BF).

- Line 3: Upward-pointing arrowhead (GC 8.3).
- Lines 4-7: Check mark (GC 9).
- Line 8: Line is indented in print. Transcribe two cells to the right of the beginning of the previous print line (GC 5.2.1). Solid cursor (GC 8.3).
- Lines 9 and 11: Horizontal lines separating sections of the screen run the width of the page (GC 5.8).
- Line 10: Symbols are not inserted to replace blank spaces in print (GC 5.5).
- Line 12: When items in a horizontal list consist of two or more words, two spaces are inserted between each item (GC 5.6).
- Line 13: Closing screen line (GC 4 and GC 4.1).
- Line 14: A blank line is required (GC 4.3).
- Line 15: Keystrokes is a cell 5 heading.
- Lines 18, 20, 22 and 24: No space is inserted between a colon and a following word or letter to which it applies.

Lines 20, 22, and 24: Contractions are used in *Line* and *Thick*. These words appear in the adjacent screen and need to replicate their appearance in the screen.

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Lines 1-3: This is a transcriber's note explaining the drop-down menu in the following calculator screen.

Lines 1 and 2: A blank line is not left between an opening screen line and a related heading (BF).

Line 3: Upward-pointing arrowhead (GC 8.3).

Line 4: The term is highlighted in print (GC 5.3).

Lines 4-7 and 15: Check mark (GC 9).

Line 8: Line is indented in print. Transcribe two cells to the right of the beginning of the previous print line (GC 5.2.1). Symbols are not inserted to replace blank spaces in print (GC 5.5).

Lines 9 and 11: Horizontal lines separating sections of the screen run the width of the page (GC 5.8). Line 10: Caret (GC 9).

Line 12: When items in a horizontal list consist of two or more words, two spaces are inserted between each item (GC 5.6).

Line 13: Blank line per transcriber's note on previous page.

Line 14: A tab of the drop-down menu is highlighted (GC 5.3). Downward-pointing arrowhead (GC 8.3).

Line 16: Items are highlighted (GC 5.3).

Lines 16-22: Lines are indented in print. Transcribe two cells to the right of the beginning of the previous print line (GC 5.2.1).Line 23: Closing screen line (GC 4 and GC 4.1).