

## 0.8 Various Calculator Settings

### 0.8.1 Connected vs. Dot Mode

Connected and dot modes refer to the *style* in which the graph will be drawn. In *connected* mode, the graph is shown by connecting all plotted points to form a solid line. In *dot* mode, the graph is shown only as a series of dots.

Let's see the difference by graphing  $y = \frac{2}{x-1}$  using *connected* mode and using *dot* mode.

TI-83 (see page 100), TI-89 (see page 102), TI-86 (see page 104).

### 0.8.2 Format Function see page 106

The **Format** function is used to turn on and off (or *toggle*) various features. These choices may be slightly different depending on your calculator.

Let's look at each one of the choices while graphing two simple functions  $y = 2x$  and  $y = x + 1$ , with a viewing window of  $[-5, 5]$  by  $[-5, 5]$ .

TI-83 (see page 107), TI-89 (see page 110), TI-86 (see page 114).

### 0.8.3 Mode Settings see page 118

The **Mode** Button gives us various settings. We will consider a few of them here and the others can be explored as you wish.

TI-83 (see page 119), TI-89 (see page 121), TI-86 (see page 123).

**TI-83:** Connected/Dot Mode

Press **Y=** and erase any previous functions with **Clear**.

Enter the formula  $y = \frac{2}{x-1}$  for  $y_1$ :

```
Plot1 Plot2 Plot3
\Y1=2/(X-1)
\Y2=
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
```

Press **Window** and enter the appropriate values for a window of  $[-4, 5]$  by  $[-4, 4]$ :

```
WINDOW
Xmin=-4
Xmax=5
Xscl=1
Ymin=-4
Ymax=4
Yscl=1
Xres=1
```

Press **Graph** and we see the function drawn in *connected* mode. This function has a vertical asymptote at  $x = 1$  which should be drawn as a dashed line when we do this graph on paper. On the calculator, the points plotted for the function are connected; thus, the last point plotted to the left of  $x = 1$  is connected to the first point plotted to the right of  $x = 1$  creating the solid vertical line we see.



To get a better, more appropriate graph, we must change to *dot* mode. Press **Y=** to return to the function definition. Notice the backslash in front of  $y_1$ ?

```
Plot1 Plot2 Plot3
\Y1=2/(X-1)
\Y2=
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
```

Using the left arrow key,  
 move the cursor to the left  
 of  $y_1$ , so the cursor is  
 blinking on top of the backslash.

```

Plot1 Plot2 Plot3
_Y1■2/(X-1)
\Y2=
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
  
```

Press **Enter** 6 times to make the backslash a set of 3 dots. The backslash will change to

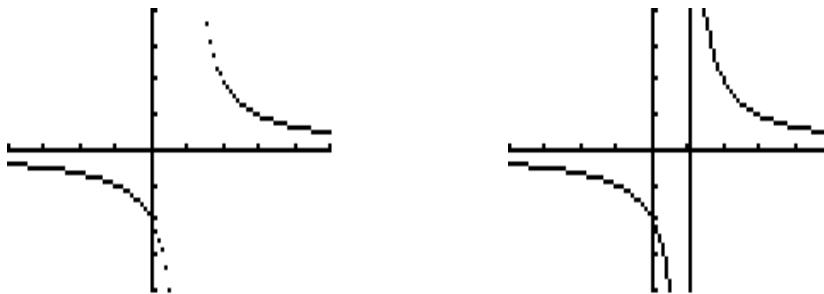
1. a thick line - used for drawing very thick curves
2. an upper triangle - used for shading above curves
3. a lower triangle - used for shading below curves
4. a line with an open circle
5. an open circle
6. a dotted line (a set of 3 dots)

```

Plot1 Plot2 Plot3
\Y1■2/(X-1)
\Y2=
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
  
```

The last one, the set of 3 dots, is  
 the one we need.

Press **Graph** to see the function in *dot* mode shown on the left and compare it to the *connected* graph shown on the right.



The *dot* mode graph is the one we want. When drawing this on paper, we also need to show the vertical asymptote as a dashed line. Refer to section 0.3.1 on rational functions.

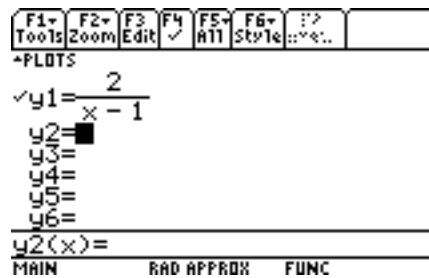
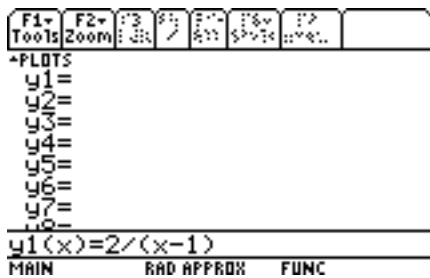
## TI-89: Connected/Dot Mode

We want to graph  $y = \frac{2}{x-1}$  using *connected* mode and using *dot* mode.

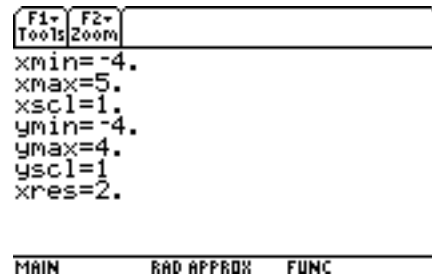
Press  $\blacklozenge$  and  $\boxed{\text{F1 Y=}}$ . If any functions are defined, place the cursor on the definition and press  $\boxed{\text{Clear}}$ .

Enter the formula  $y = \frac{2}{x-1}$  for  $y_1$ .

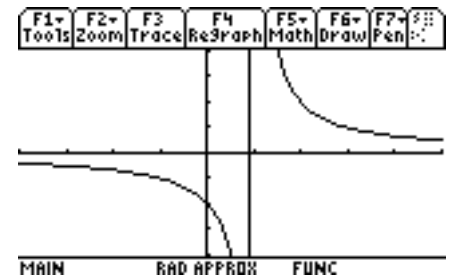
Press  $\boxed{\text{Enter}}$  to see



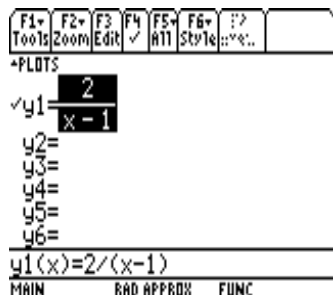
Using  $\blacklozenge$  and  $\boxed{\text{F2 Window}}$ , enter the viewing window  $[-4, 5]$  by  $[-4, 4]$



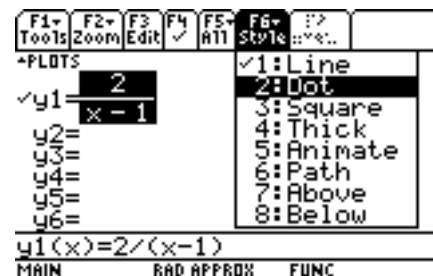
Draw the graph by pressing  $\blacklozenge$  and  $\boxed{\text{F3 Graph}}$ . The graph is currently drawn using *connected* mode. This function has a vertical asymptote at  $x = 1$  which should be drawn as a dashed line when we do this graph on paper. On the calculator, the points plotted for the function are connected; thus, the last point plotted to the left of  $x = 1$  is connected to the first point plotted to the right of  $x = 1$  creating the solid vertical line we see.



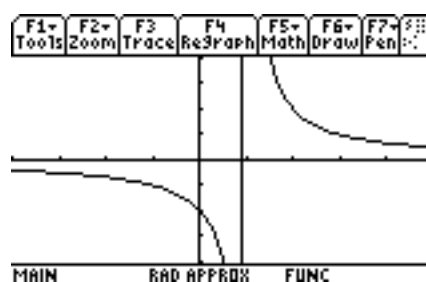
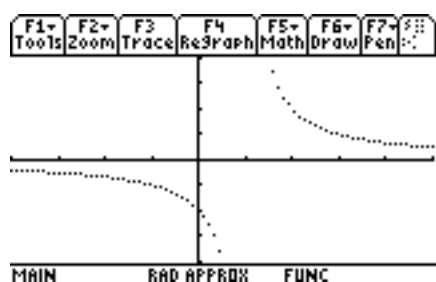
To get a better, more appropriate graph, we must change to *dot* mode. Press  $\blacklozenge$  and  $\boxed{\text{F1 Y=}}$  to return to the function definition (left picture). With the cursor on the function definition, press  $\boxed{\text{2nd}}$  and  $\boxed{\text{F6 Style}}$  (right picture).



See the checkmark beside 1:Line? The current style used for drawing the graph is *connected* mode, or *line* mode on the TI-89. Enter the number 2, or using the down arrow key, move the cursor to 2:Dot and press  $\boxed{\text{Enter}}$ .



Now redraw the graph using  $\blacklozenge$  and  $\boxed{\text{F3 Graph}}$  to see the graph on the left which uses *dot* mode. Compare it to the *connected* mode graph on the right.



The *dot* mode graph is the one we want. When drawing this on paper, we also need to show the vertical asymptote as a dashed line. Refer to section 0.3.1 on rational functions.

## TI-86: Connected/Dot Mode

We want to graph  $y = \frac{2}{x-1}$  using *connected* mode and *dot* mode.

Press **Graph**, then **F1 y(x)=**, and use **Clear** to erase any previously defined functions.

Enter the formula  $y = \frac{2}{x-1}$  for  $y_1$ .

```
Plot1 Plot2 Plot3
√1 2/(x-1)
√2=
```

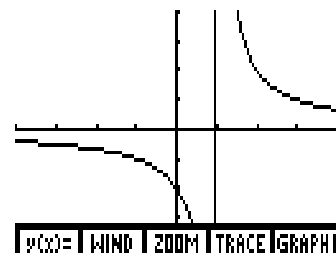
```
MODE WIND ZOOM TRACE GRAPH
ALL+ ALL- STYLE
```

Press **2nd** and **F2 Wind**. Enter the appropriate values for a window of  $[-4, 5]$  by  $[-4, 4]$ .

```
WINDOW
xMin=-4
xMax=4
xScl=1
yMin=-4
yMax=4
↓yScl=1
```

```
MODE WIND ZOOM TRACE GRAPH
```

Press **F5 Graph** and we see the line drawn in *connected* mode. This function has a vertical asymptote at  $x = 1$  which should be drawn as a dashed line when we do this graph on paper. On the calculator, the points plotted for the function are connected; thus, the last point plotted to the left of  $x = 1$  is connected to the first point plotted to the right of  $x = 1$  creating the solid vertical line we see.



To get a better, more appropriate graph, we must change to *dot* mode. Press **F1 y(x)=** to return to the function definition. With the cursor on the definition  $y_1$  for this function, press **More** to see the additional options available.

```
Plot1 Plot2 Plot3
√1 2/(x-1)
```

```
MODE WIND ZOOM TRACE GRAPH
ALL+ ALL- STYLE
```

Notice the backslash in front of  $y_1$ ? It is currently indicating we are using a line to draw the graph. Press **F3 Style** and notice the change in the backslash.

Each time you press **F3 Style** the backslash changes as follows:

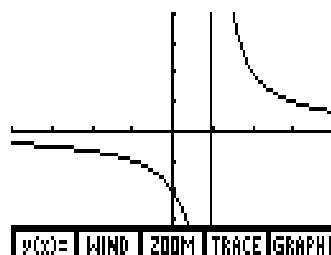
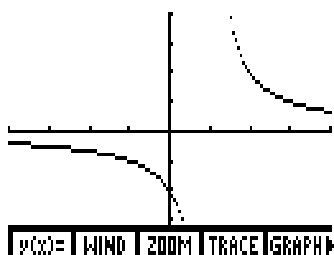
1. a thick line - used for drawing very thick curves
2. an upper triangle - used for shading above curves
3. a lower triangle - used for shading below curves
4. a line with an open circle
5. an open circle
6. a dotted line - a set of 3 dots

This last one, the backslash as 3 dots, is the one we want for *dot* mode.

```
Plot1 Plot2 Plot3
y1=2/(x-1)
```

```
MODE WIND ZOOM TRACE GRAPH
ALL+ ALL- STYLE
```

Press **2nd** and **F5 Graph** to see the line on the left drawn in *dot* mode. Compare this graph to the one on the right drawn in *connected* mode.



The *dot* mode graph is the one we want. When drawing this on paper, we also need to show the vertical asymptote as a dashed line. Refer to section 0.3.1 on rational functions.

## 0.8.2 Format Function

The **Format** function is used to turn on and off (or *toggle*) various features. These choices may be slightly different depending on your calculator.

Let's look at each one of these while graphing two simple functions  $y = 2x$  and  $y = x + 1$ , with a viewing window of  $[-5, 5]$  by  $[-5, 5]$ .

TI-83 (see page 107), TI-89 (see page 110), TI-86 (see page 114).

## TI-83 Format Features

Press **2nd** and **Format** (the second function for Zoom).  
The left side should be selected for all features  
(so they all show black backgrounds):

```

RectGC PolarGC
CoordOn CoordOff
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
ExprOn ExprOff
  
```

If your screen is different, use the arrow keys to move the blinking cursor to the feature not selected in black and press **Enter**. For example, if **GridOn** is selected as in the left picture, move the blinking cursor to **GridOff** and press **Enter**, so we see this picture on the right.

```

RectGC PolarGC
CoordOn CoordOff
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
ExprOn ExprOff
  
```

```

RectGC PolarGC
CoordOn CoordOff
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
ExprOn ExprOff
  
```

Thus, we should have these features selected RectGC, CoordOn, GridOff, AxesOn, LabelOff, ExprOn.

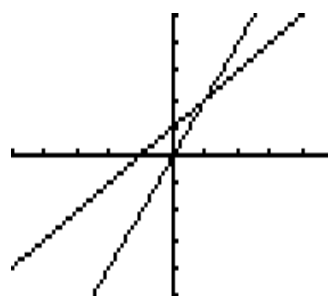
Now, let's make some changes and see what happens.

Press **Y=** and clear any function(s) left over from previous work. Enter the two formulas, using  $y_1 = 2x$  and  $y_2 = x + 1$ .

```

Plot1 Plot2 Plot3
Y1=2X
Y2=X+1
Y3=
Y4=
Y5=
Y6=
Y7=
  
```

Press **Window** and enter the appropriate values for  $[-5, 5]$  by  $[-5, 5]$ . Press **Graph** to see



Let's look at some of the features we can change to see what happens.

Press **2nd** and **Format**.

- **RectGC**, **PolarGC** - graphing rectangular and polar coordinates

Choose **RectGC** for graphing rectangular coordinates,  $x$  and  $y$ .

Choose **PolarGC** for graphing polar coordinates,  $r$  and  $\theta$ .

- CoordOn, CoordOff - the cursor coordinates for  $x$  and  $y$

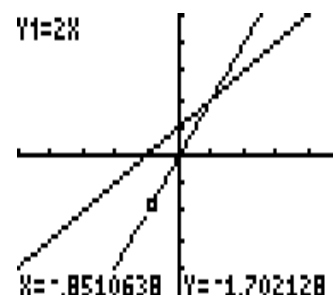
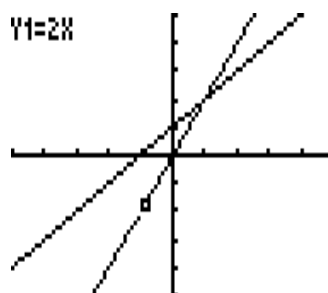
Choose CoordOff to *not* show the cursor's coordinates (left picture below).

Press **Graph**, and we see the results in the middle picture after we use **Trace**. The cursor is close to  $x = -1$ , but we do not see the coordinates for  $x$  and  $y$ . To see the coordinates for  $x$  and  $y$  (right picture), press **2nd** and **Format** and choose CoordOn. Try **Trace** again.

```

RectGC PolarGC
CoordOn CoordOff
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
ExprOn ExprOff

```



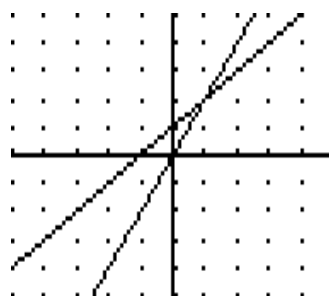
- GridOff, GridOn - the grid lines for the graph

Choose GridOn in order to print a grid for the coordinate system. To see the results, press **Graph** and a grid of dots is shown along with the graph of the two lines.

```

RectGC PolarGC
CoordOn CoordOff
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
ExprOn ExprOff

```



Press **2nd** and **Format**. Choose GridOff to turn off the grid of dots.

- AxesOn, AxesOff - the  $x$ -axis and  $y$ -axis lines

Choose AxesOff to see no axes on our graph. To see the results, press **Graph** and the  $x$ - and  $y$ -axes are not shown on the graph of the two lines.

```

RectGC PolarGC
CoordOn CoordOff
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
ExprOn ExprOff

```



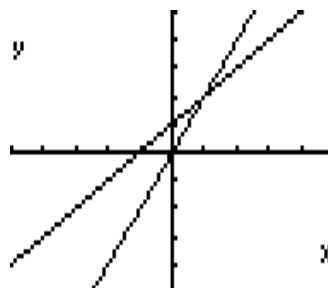
Press **2nd** and **Format**. Choose AxesOn to display the  $x$ - and  $y$ -axes again.

- LabelOff, LabelOn - the labels for the  $x$ - and  $y$ -axes

Choose LabelOn to see the axes labeled as  $x$  and  $y$ . To see the results, press **Graph** and the  $x$ - and  $y$ -axes are labeled on the graph of the two lines. Normally, we do *not* label the axes. The labels are sort-of in unusual places and tend to clutter the picture.

```

rectOff PolarGC
CoordOff CoordOff
GridOff GridOn
AxesOff AxesOff
LabelOff LabelOn
ExprOff ExprOff
  
```



Press **2nd** and **Format**. Choose LabelOff to not label the  $x$ - and  $y$ -axes.

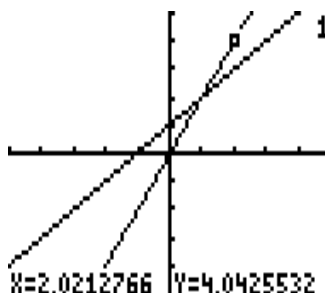
- ExprOn, ExprOff - the definitions for the function being graphed

Choose ExprOff to turn off the printing of the function definition (left picture).

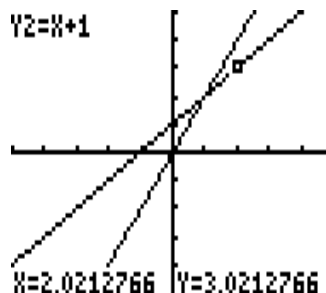
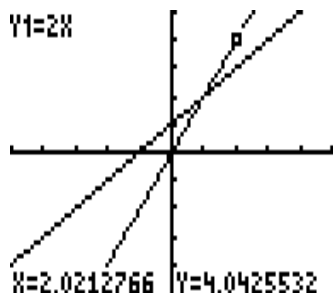
To see the results, press **Graph** and **Trace**. We see the number 1 in the upper right corner indicating the cursor is on function  $y_1$  (middle picture). Use the up (or down) arrow to move the cursor to the other line. Now you see the number 2 in the right corner indicating the cursor is on line  $y_2$  (right picture).

```

rectOff PolarGC
CoordOff CoordOff
GridOff GridOn
AxesOff AxesOff
LabelOff LabelOn
ExprOn ExprOff
  
```



Press **2nd** and **Format**. Choose ExprOn to print the function definition for  $y_1$ , etc. To see the results, press **Graph** and **Trace**. We see the expression in the upper left corner indicating the cursor is on the line for function  $y_1$  (left picture). Use the up (or down) arrow to move the cursor to the other line. Now we see the expression in the upper left corner indicating the cursor is on the line for function  $y_2$  (right picture).

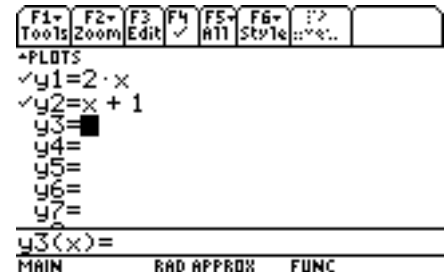


You should decide which way you want to do this one.

## TI-89 Format Features

Let's look at each of the formatting options while graphing two simple functions  $y = 2x$  and  $y = x + 1$ , with a viewing window of  $[-5, 5]$  by  $[-5, 5]$ .

Press the green  $\blacklozenge$  key and  $\boxed{\text{F1 Y=}}$  and clear any previous functions. Enter the two formulas, using  $y_1 = 2x$  and  $y_2 = x + 1$ .



Press  $\blacklozenge$  and  $\boxed{\text{F2 Window}}$  and enter the appropriate values for  $[-5, 5]$  by  $[-5, 5]$ .

Let's first check the settings for Format. Press  $\boxed{\text{F1 Tools}}$  to see the left picture. Use the down arrow key to move to 9:Format.



Press  $\boxed{\text{Enter}}$  to see the Format features.



Let's make some changes and see what happens.

- **Coordinates** - type of coordinates, rectangular or polar, if any

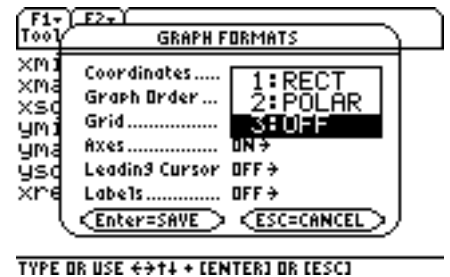
Use the right arrow to see the options available for Coordinates.



Choose Rect, “rectangular”, for rectangular coordinates  $x$  and  $y$ .

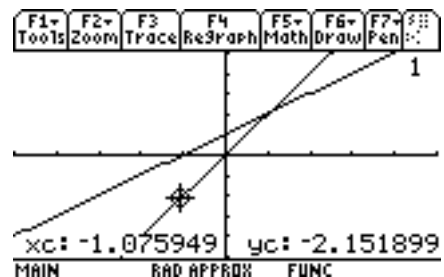
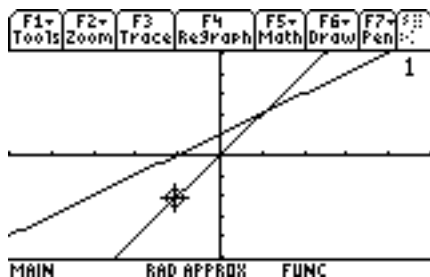
Choose Polar, “polar”, for polar coordinates  $r$  and  $\theta$ .

Let’s try choosing Off, to *not* print the coordinates.



Press **Enter** to save the change to Coordinates and **Enter** to save the change to Format. Press **◆** and **F3 Graph** to draw the graph.

We see the results in the left picture after we use **F3 Trace**. The cursor is close to  $x = -1$ , but we do not see the coordinates for  $x$  and  $y$ . To see the coordinates for  $x$  and  $y$  (right picture), press **F1 Tools**, enter 9, and change Coordinates back to Rect. Press **Enter** to save the change to Coordinates, and **Enter** to save the change to Format. The graph is redrawn. Press **F3 Trace**, and we see the coordinates.



- Graph Order

Choose Seq, “sequence”, to graph each function in the order  $y_1, y_2$ , etc. We usually prefer this one.

Choose Simul, “Simultaneous”, to graph all the functions at the same time.

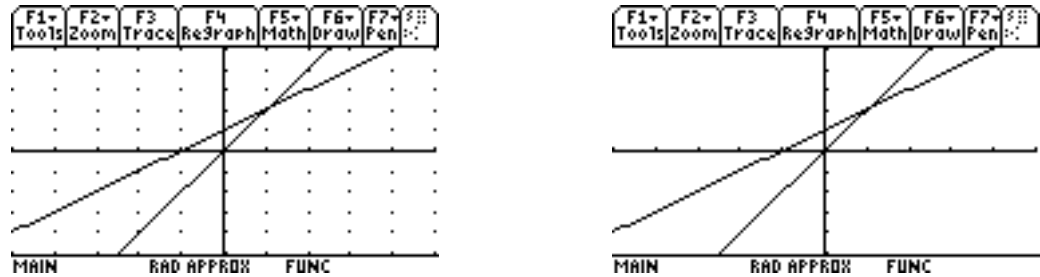
- Grid - print grid of dots

Move the cursor to the right to see the options (left picture). Move the cursor down to select 2:On (right picture) and press **Enter** to keep this change to Grid.



Press **Enter** to save the change to Format.

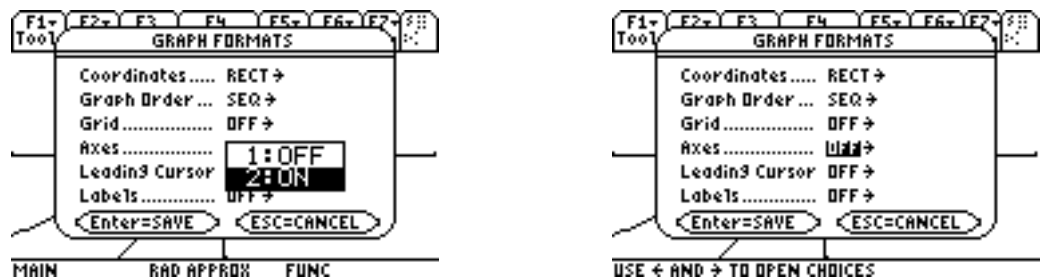
The graph is now drawn with the grid for the coordinate system (left picture). Normally, we probably do not want to see the grid, so turn it off again by pressing **F1 Tools**, enter 9 for 9:Format, Move down to **Grid** and change it back to **Off**. Press **Enter** to save the change to **Grid** and press **Enter** to save the changes to **Format**. The graph is redrawn without the grid (right picture).



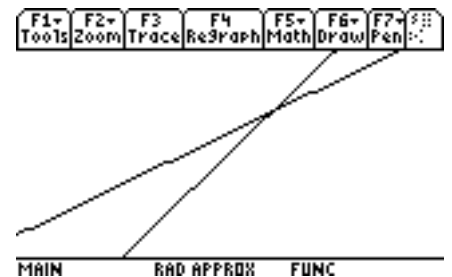
- **Axes** - print the  $x$ -axis and  $y$ -axis lines

Press **F1 Tools** and enter 9 again to see the formatting options.

Move the cursor to **Axes On**. Using the right arrow key, we see the options of **Off** and **On**. Currently it is turned **On**. Using the up arrow, highlight **Off** and press **Enter**. Notice in the picture on the right that the **Axes** are now turned off.



Press **Enter** to save the Formatting changes and we see the graph without the axes. Normally, we do want the axes to show, so press **F1 Tools** and enter 9. Change **Axes** back to **On**.

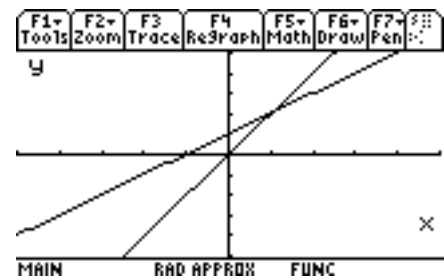
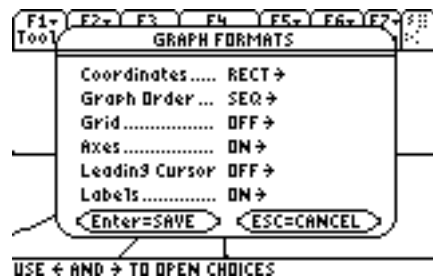


- **Leading Cursor**

You may want to try changing this one to see what happens. It is interesting, but slows down the drawing of the graph. Normally, leave it turned **Off**.

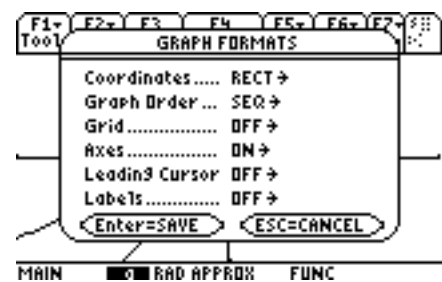
- Labels - prints  $x$ -axis and  $y$ -axis labels

Move the cursor to **Labels Off**. Change it to **On** and press **Enter** to see the options in the left picture. Press **Enter** to save the changes and graph the functions to see the picture on the right with the axes labeled for  $x$  and  $y$ . Normally, we do *not* label the axes. The labels are sort-of in unusual places and tend to clutter the picture.



Press **F1 Tools** and enter 9, and turn the labels off again.

So, normally, we want the format options to be Coordinates (Rect), Graph Order (Seq), Grid (Off), Axes (On), Leading Cursor (Off), Labels (Off).



## TI-86 Format Features

Let's look at each formatting option while graphing two simple functions  $y = 2x$  and  $y = x + 1$ , with a viewing window of  $[-5, 5]$  by  $[-5, 5]$ .

Press **Graph**, then **F1 y(x)=**, and clear any previous functions. Enter the two formulas, using  $y_1 = 2x$  and  $y_2 = x + 1$  (left picture). Press **2nd** and **F2 Wind** to set up the viewing window. Enter the appropriate values for  $[-5, 5]$  by  $[-5, 5]$  (right picture).

<pre> Plot1 Plot2 Plot3 y1=2x y2=x+1 y3= </pre>	<pre> WINDOW xMin=-5 xMax=5 xScl=1 yMin=-5 yMax=5 yScl=1 </pre>
<pre> WIND ZOOM TRACE GRAPH x y INSF DELF SELCT▶ </pre>	<pre> WIND ZOOM TRACE GRAPH▶ </pre>

To check the settings for Format, press **More** to see additional options (left picture). Select Formt by pressing **F3** (right picture).

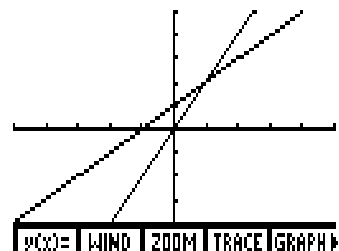
<pre> WINDOW xMin=-5 xMax=5 xScl=1 yMin=-5 yMax=5 yScl=1 </pre>	<pre> RectGC PolarGC CoordOn CoordOff DrawLine DrawDot SeqG SimulG GridOff GridOn AxesOn AxesOff LabelOff LabelOn </pre>
<pre> MATH DRAW FORMT STGB RCGB▶ </pre>	<pre> WIND ZOOM TRACE GRAPH▶ </pre>

If your screen is different, use the arrow keys to move the blinking cursor to the feature not selected in black and press **Enter**. For example, if **GridOn** is selected (left picture), move the blinking cursor to **GridOff** and press **Enter** (right picture).

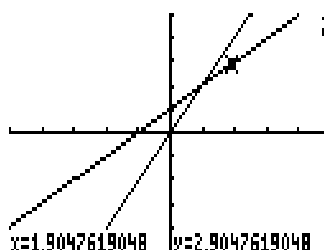
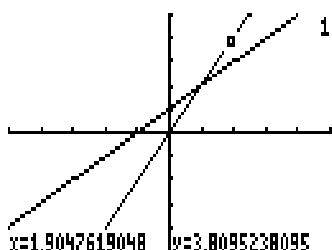
<pre> RectGC PolarGC CoordOn CoordOff DrawLine DrawDot SeqG SimulG GridOff GridOn AxesOn AxesOff LabelOff LabelOn </pre>	<pre> RectGC PolarGC CoordOn CoordOff DrawLine DrawDot SeqG SimulG GridOff GridOn AxesOn AxesOff LabelOff LabelOn </pre>
<pre> WIND ZOOM TRACE GRAPH▶ </pre>	<pre> WIND ZOOM TRACE GRAPH▶ </pre>

Thus, we should have these features selected  
 RectGC, CoordOn, DrawLine, SeqG, GridOff, AxesOn, LabelOff.

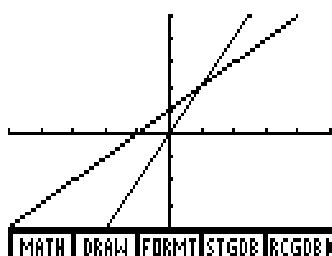
Graph the functions by pressing **F5 Graph** to see



Notice, if we press **F4 Trace**, we see the coordinates of the point for the cursor (left picture). In the upper right corner, we see the number 1 indicating the cursor is on the line for  $y_1 = 2x$ . Use the up (or down) arrow to move the cursor to the other line and notice the number 2 indicating the cursor is now on the line for  $y_2 = x + 1$  (right picture).



Let's look at some of the features we can change to see what happens. Press **More** to see additional options (left screen), and **F3 Format** for the Format options (right screen).



- RectGC, PolarGC - graphing rectangular and polar coordinates

Choose RectGC for graphing rectangular coordinates,  $x$  and  $y$ .

Choose PolarGC for graphing polar coordinates,  $r$  and  $\theta$ .

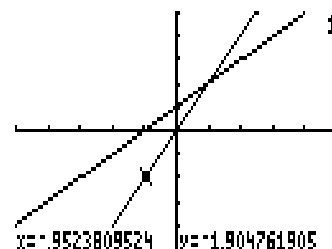
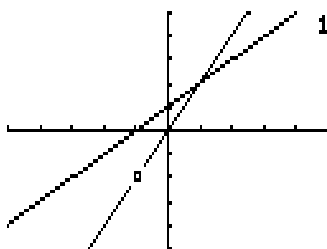
- CoordOn, CoordOff - the cursor coordinates for  $x$  and  $y$

Choose CoordOff to *not* show the cursor's coordinates (left picture below). Press **Enter** to save the selection. Press **F5 Graph**, and we see the results in the middle picture after we use **Trace**. The cursor is close to  $x = -1$ , but we do not see the coordinates for  $x$  and  $y$ . To see the coordinates for  $x$  and  $y$  (right picture), press **Exit**, **More**, **F3 Formt** and choose CoordOn. Again, press **Enter** to save the change just made, and **F5 Graph**, then try **Trace** again.

```

RectGC PolarGC
CoordOn CoordOff
DrawLine DrawDot
SeqG SimulG
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
V(x)= | WIND | ZOOM | TRACE | GRAPH

```



Press **Exit**, **More**, **F3 Formt** to see the Format options again.

- DrawLine, DrawDot - *connected* or *dot* mode for all functions

Choose DrawLine to graph *all* functions in *connected* mode.

Choose DrawDot to graph *all* functions in *dot* mode.

- SeqG, SimulG

Choose SeqG, "Sequence", to graph each function in the order  $y_1, y_2$ , etc. We usually prefer this one.

Choose SimulG, "Simultaneous", to graph all the functions at the same time.

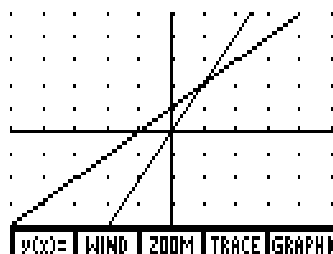
- GridOff, GridOn - the grid lines for the graph

Choose GridOn in order to print a grid for the coordinate system (left picture). To see the results, press **F5 Graph** and a grid of dots is shown along with the graph of the two lines (right picture).

```

RectGC PolarGC
CoordOn CoordOff
DrawLine DrawDot
SeqG SimulG
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
V(x)= | WIND | ZOOM | TRACE | GRAPH

```



Press **More**, **F3 Formt**, and choose GridOff to turn off the grid of dots. Remember to save the change by pressing **Enter**.

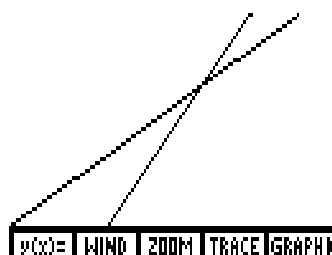
- AxesOn, AxesOff - the  $x$ -axis and  $y$ -axis lines

Choose AxesOff to see no axes on our graph. Press **Enter** (left picture). To see the results, press **F5 Graph** and the  $x$ - and  $y$ -axes are not shown on the graph of the two lines (right picture).

```

RectGC PolarGC
CoordOn CoordOff
DrawLine DrawDot
SeqG SimulG
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
-----
V(X)= | WIND | ZOOM | TRACE | GRAPH▶

```



Press **More**, **F3 Formt**. Choose AxesOn to display the  $x$ - and  $y$ -axes again.

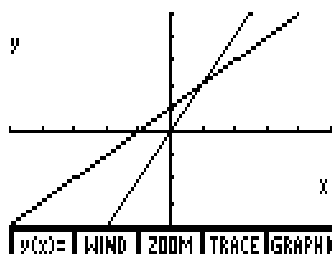
- LabelOff, LabelOn - the labels for the  $x$ - and  $y$ -axes

Choose LabelOn to see the axes labeled as  $x$  and  $y$ . Press **Enter** (left picture). To see the results, press **F5 Graph** and the  $x$ - and  $y$ -axes are labeled on the graph of the two lines (right picture). Normally, we do *not* label the axes. The labels are sort-of in unusual places and tend to clutter the picture.

```

RectGC PolarGC
CoordOn CoordOff
DrawLine DrawDot
SeqG SimulG
GridOff GridOn
AxesOn AxesOff
LabelOff LabelOn
-----
V(X)= | WIND | ZOOM | TRACE | GRAPH▶

```



Press **More**, **F3 Formt**. Choose LabelOff to not label the  $x$ - and  $y$ -axes.

### 0.8.3 Mode Settings

The Mode Button gives us various settings. We will consider a few of them here and the others can be explored as you wish.

TI-83 (see page 119), TI-89 (see page 121), TI-86 (see page 123).

## TI-83 Mode Settings

Press **Mode** to see these typical settings:

```
Normal Sci Eng
Float 0123456789
Radian Degree
Func Par Pol Seq
Connected Dot
Sequential Simul
Real a+bi re^θi
Full Horiz G-T
```

- **Float** allows us to specify the number of decimal places to print in our answers. When **Float** is highlighted, ten decimal places will be printed.

If we move the blinking cursor to 6 and press **Enter**, then only 6 decimal places will be printed.

```
Normal Sci Eng
Float 0123456789
Radian Degree
Func Par Pol Seq
Connected Dot
Sequential Simul
Real a+bi re^θi
Full Horiz G-T
```

- **Radian, Degree measure**

When **Radian** is highlighted, the work will be done using *radian* measure for the trigonometric functions. To use **Degree** measure instead, move the blinking cursor to **Degree** and press **Enter**.

```
Normal Sci Eng
Float 0123456789
Radian Degree
Func Par Pol Seq
Connected Dot
Sequential Simul
Real a+bi re^θi
Full Horiz G-T
```

- **Func, Par, Pol, Seq**

If **Func** is highlighted, functions are entered using rectangular coordinates,  $x$  and  $y$ .

If **Pol** is highlighted, functions are entered using polar coordinates,  $r$  and  $\theta$ .

- **Connected, Dot**

If **Connected** is highlighted, then *all* graphs drawn will use a line to connect each point plotted. If we are graphing several functions on the same coordinate system, we can individually change one or more of them to a different mode by changing the backslash beside the function definition (see section 0.8.1).

To change to *Dot* mode, highlight Dot with the blinking cursor and press **Enter**. Then *all* graphs drawn will use a series of dots that are not connected.

```
Normal Sci Eng
Float 0123456789
Radian Degree
Func Par Pol Seq
Connected Off
Sequential Simul
Real a+bi re^θi
Full Horiz G-T
```

- Sequential, Simul

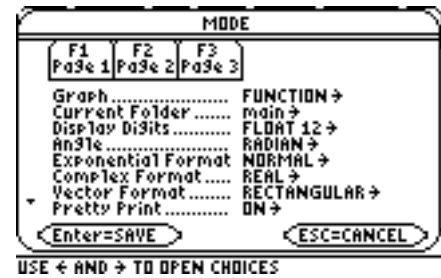
If **Sequential** is highlighted, all graphs will be drawn in a sequential fashion, first  $y_1$ , then  $y_2$ , then  $y_3$ , etc.

If **Simul** is highlighted, all graphs will be drawn at the same time.

To exit the Mode options, press **2nd** and **Quit**.

## TI-89 Mode Settings

Press **Mode** to see these typical settings:



- **Graph**

If **Function** is selected, the functions are entered using rectangular coordinates,  $x$  and  $y$ .

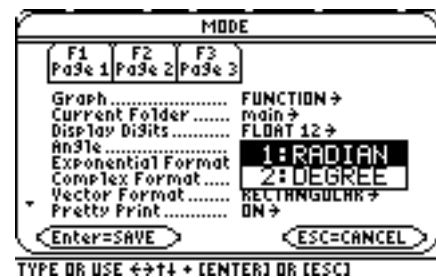
If **Polar** is selected, the functions are entered using polar coordinates,  $r$  and  $\theta$ .

- **Display Digits** allows us to change the number of decimal places to print in our answers. To see the various options, put the cursor on **Float** and use the right arrow to see the options. Then move up or down through the options. Press **Enter** to select the one you want to keep.

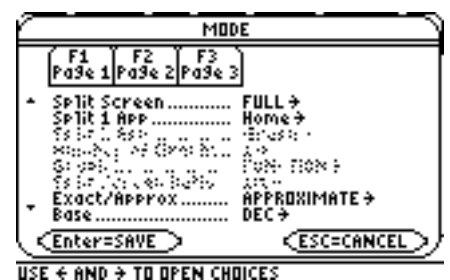
- **Angle**

Put the cursor on **Radian** and use the right arrow to see the options of **Radian** and **Degree**.

Move the cursor to the one you wish to select and press **Enter**.

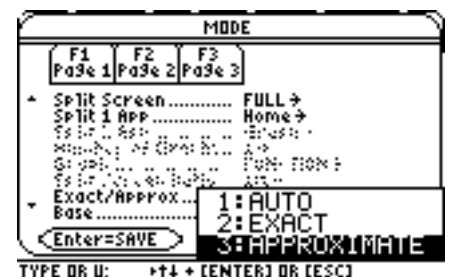


To see the second page of options, press **F2 Page 2** or use the down arrow key.



- **Exact, Approximate**

Move the cursor down to **Exact/Approx** and press the right arrow key to see the options.



Choosing **Approximate** will cause the decimal approximation to print as seen in the left picture. Choosing **Exact** will cause the fractions to print using the exact value - the fraction notation as seen in the right picture. Notice, the  $\sqrt{\frac{3}{4}}$  is simplified before printing.

F1+	F2+	F3+	F4+	F5	F6+	
Tools	Algebra	Calc	Other	Pr3mID	Clean Up	
■	$\sqrt{3/4}$			.866025403784		
■	$\frac{\sqrt{2}}{3}$			.471404520791		
■	$22/7$			3.14285714286		
<hr/>						
<b>22/7</b>						
MAIN	RAD APPROX		FUNC	3/30		

F1+	F2+	F3+	F4+	F5	F6+	
Tools	Algebra	Calc	Other	Pr3mID	Clean Up	
■	$\sqrt{3/4}$			$\frac{\sqrt{3}}{2}$		
■	$\frac{\sqrt{2}}{3}$			$\frac{\sqrt{2}}{3}$		
■	$22/7$			$22/7$		
<hr/>						
<b>22/7</b>						
MAIN	RAD EXACT		FUNC	3/30		

To exit the Mode options, press **Enter** to save the changes and exit.

## TI-86 Mode Settings

Press **2nd** and **Mode** to see these typical settings.

```
Normal Sci Eng
Float 012345678901
Radian Degree
RectC PolarC
Func Pol Param DifEq
Dec Bin Oct Hex
RectU CylU SphereU
dxDer1 dxNDer
```

- **Float** allows us to specify the number of decimal places to print in our answers. When **Float** is highlighted, at least ten decimal places are usually printed.

If we move the blinking cursor to 6 and press **Enter**, then only 6 decimal places will be printed.

```
Normal Sci Eng
Float 012345678901
Radian Degree
RectC PolarC
Func Pol Param DifEq
Dec Bin Oct Hex
RectU CylU SphereU
dxDer1 dxNDer
```

- **Radian vs Degree measure**

When **Radian** is highlighted, the work will be done using *radian* measure for the trigonometric functions. To use **Degree** measure instead, move the blinking cursor to **Degree** and press **Enter**.

```
Normal Sci Eng
Float 012345678901
Radian Degree
RectC PolarC
Func Pol Param DifEq
Dec Bin Oct Hex
RectU CylU SphereU
dxDer1 dxNDer
```

- **RectC, PolarC** - graphing rectangular and polar coordinates

Choose **RectC** for graphing rectangular coordinates,  $x$  and  $y$ .  
Choose **PolarC** for graphing polar coordinates,  $r$  and  $\theta$ .

- **Func, Pol, Param DifEq**

If **Func** is highlighted, functions are entered using rectangular coordinates,  $x$  and  $y$ .

If **Pol** is highlighted, functions are entered using polar coordinates,

To exit the Mode options, press **Exit**.