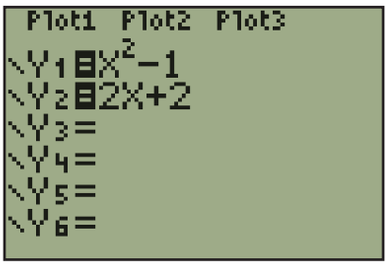
Calculator Guide

TI-83/84™ Skills
Lesson 7.1 Solving Systems of Equations Graphically

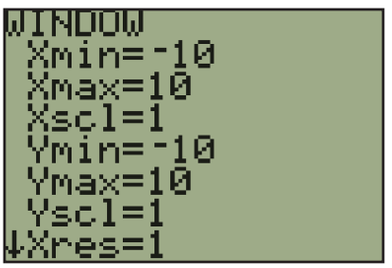
1. Solve the system $y = x^2 - 1$ and $y = 2x + 2$.

Begin by entering the corresponding functions. Rearrange each equation to $y =$ ____ if necessary.



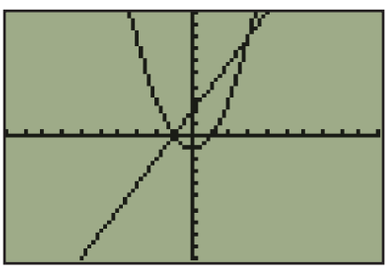
- Press [Y=]
- Enter $x^2 - 1$ into Y1 and $2x + 2$ into Y2.

Next, set the domain and range of the graph.



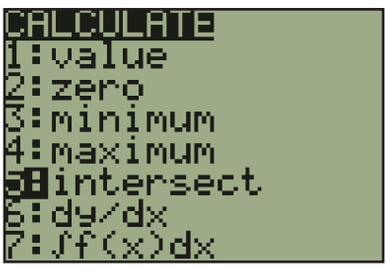
- Press [WINDOW]
- Set the Xmin, Xmax, Ymin, and Ymax to appropriate values. Sometimes it will take a bit of guessing and testing to get an appropriate window.

Now, view the graph.

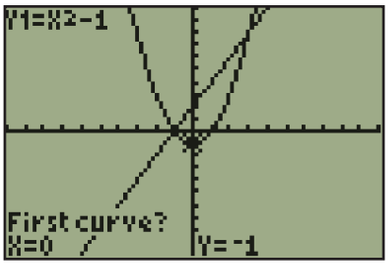


- Press[GRAPH]
- This graph shows both intersections, so the window setting is appropriate.

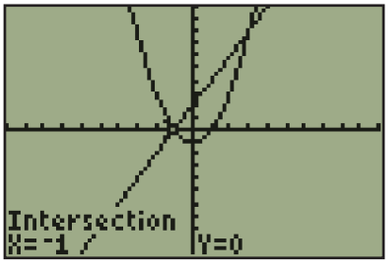
Determine where the graphs of the two functions intersect.



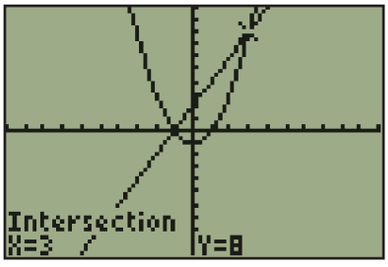
- Press [2nd], [Trace]
- Select 5: intersect



- The calculator will ask for the first curve. Select one of the curves of interest and press [ENTER]. Use the up and down arrows to switch between functions.
- The calculator will ask for a second curve. Select the other curve of interest and press [ENTER].
- The calculator will ask for a guess. Move the cursor so it is near the intersection of interest and press [ENTER].



- The first intersection occurs at (–1, 0).



- Repeat the process, but move your guess near the second intersection.
- The second intersection occurs at (3, 8).

The solutions to the system are (–1, 0) and (3, 8).

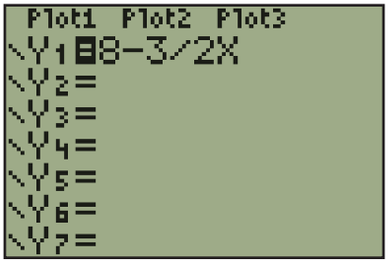
Lesson 7.3 Linear Inequalities in Two Variables

Inequalities can be graphed using a TI-83/84™ calculator.

1. Graph $3x + 2y > 16$.

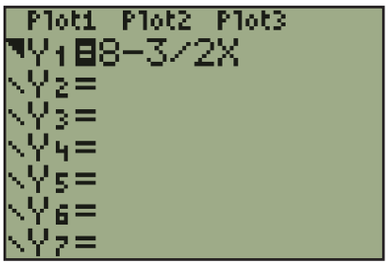
Begin by isolating y.

$$3x + 2y > 16$$
$$2y > 16 - 3x$$
$$y > 8 - \frac{3}{2}x$$

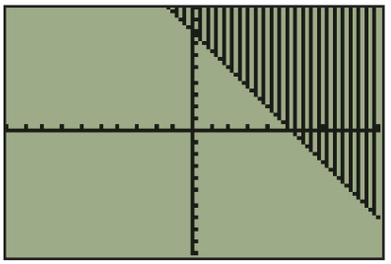


- Press [Y=]
- Enter $8 - \frac{3}{2}x$ into Y1

Use a test point or interpret the inequality to decide whether to shade above the boundary or below the boundary. The upper region will be shaded for $y > 8 - \frac{3}{2}x$.



- Move the cursor to the left to select different line and shading types.
- Press [ENTER] until the desired shading appears. The symbol ◣ means the area above the graph of the function will be shaded. The symbol ◢ means the area below the graph of the function will be shaded.



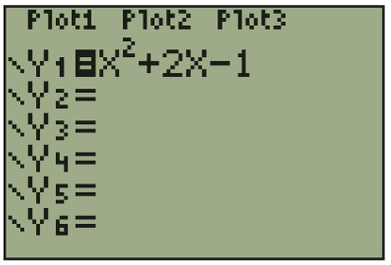
- Once the correct shading has been selected, press [GRAPH]. You may need to adjust the window settings to show an appropriate region.
- The calculator does not distinguish between strict and non-strict inequalities. You will need to remember which type you are working with when interpreting the graph.

Lesson 7.5 Quadratic Inequalities in Two Variables

Inequalities can be graphed using a TI-83/84™ calculator.

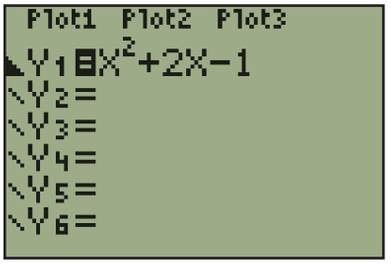
2. Graph $y \leq x^2 + 2x - 1$.

Begin by isolating y if necessary.

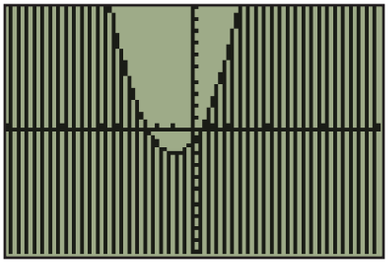


- Press [Y=]
- Enter $x^2 + 2x - 1$ into Y1

Use a test point or interpret the inequality to decide whether to shade above the boundary or below the boundary. The lower region will be shaded for $y \leq x^2 + 2x - 1$.



- Move the cursor to the left to select different line and shading types.
- Press [ENTER] until the desired shading appears. The symbol ◣ means the area above the graph of the function will be shaded. The symbol ◢ means the area below the graph of the function will be shaded.



- Once the correct shading has been selected, press [GRAPH]. You may need to adjust the window settings to show an appropriate region.
- The calculator does not distinguish between strict and non-strict inequalities. You will need to remember which type you are working with when interpreting the graph.

Graphing Standards for Students

- Plot a minimum of three ordered pairs for linear functions; two points determine a line and the third is your check point.
- Plot an appropriate number of ordered pairs to ensure that the shape of non-linear functions can be determined.
- Label the x- and y-axes.
- Include an appropriate scale on the axes.
- Title the graph where necessary.
- Define the line with equation/function beside or near it.
- Apply arrows on the end of function, where necessary.
- Plot and label the x- and y-intercepts, if applicable.
- Label the vertex, if applicable.
- Include asymptotes, open circles for points of discontinuity, and end points, where applicable.
- When a graph is to be sketched, the shape of the graph is determined by important features such as asymptotes, maximum and minimum points, intercepts, etc. on an appropriate scale. All important features are labelled.