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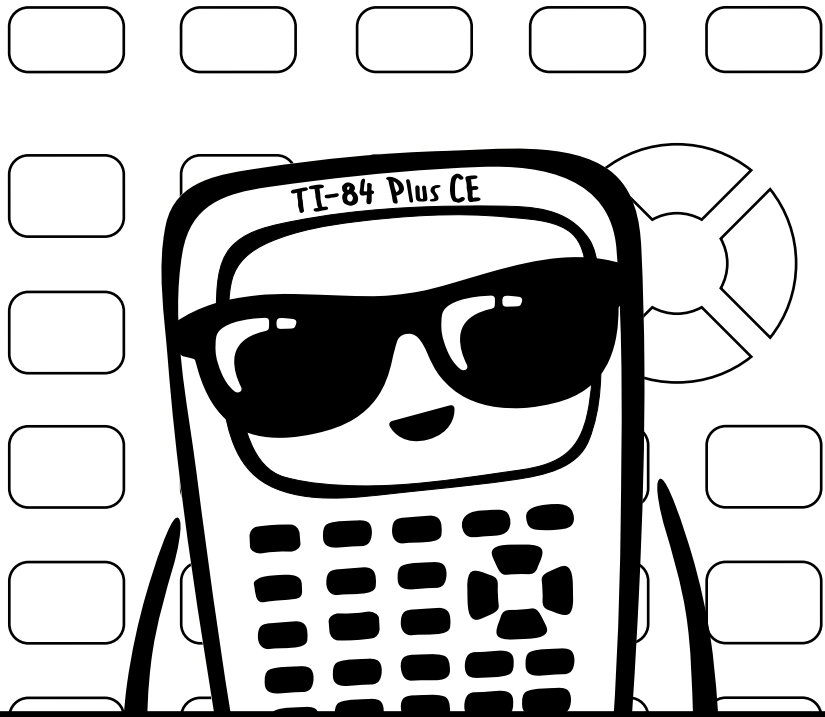
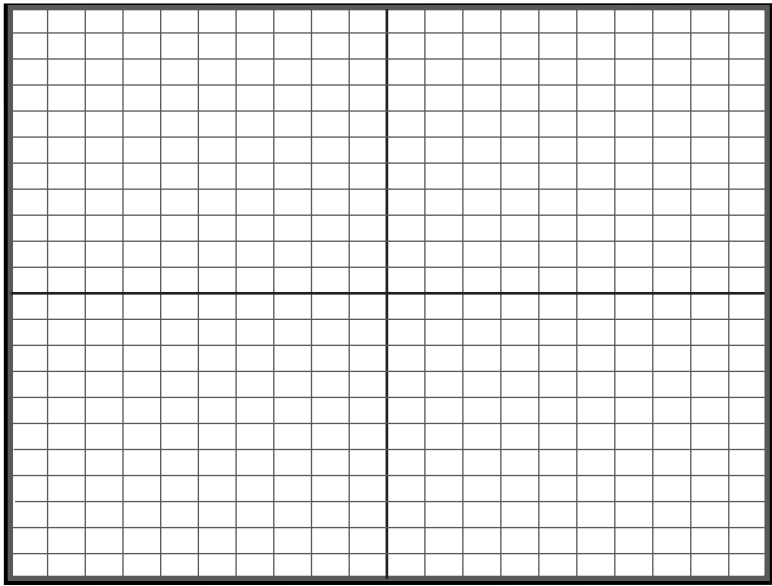
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**TI-84 Plus CE**



Use the equations and color key below  
to draw a secret image on the graph.

### Orange

$$f(x) \geq \begin{cases} |x + 12| + 5; -10 \leq x < -9 \\ |x + 6| + 5; -9 \leq x < -3 \\ |x| + 5; -3 \leq x < 3 \\ |x - 6| + 5; -10 \leq x < 9 \\ |x - 12| + 5; -10 \leq x \leq 10 \end{cases}$$

$$f(x) \leq \begin{cases} -|x + 12| - 5; -10 \leq x < -9 \\ -|x + 6| - 5; -9 \leq x < -3 \\ -|x| - 5; -3 \leq x < 3 \\ -|x - 6| - 5; 3 \leq x < 9 \\ -|x - 12| - 5; 9 \leq x \leq 10 \end{cases}$$

### Yellow

$$f(x) = \begin{cases} \sqrt{1 - x^2}; -1 \leq x \leq 1 \end{cases}$$

$$f(x) = \begin{cases} -\sqrt{1 - x^2}; -1 \leq x \leq 1 \end{cases}$$

$$f(x) = \begin{cases} \sqrt{4 - x^2}; -2 \leq x \leq 2 \end{cases}$$

$$f(x) = \begin{cases} -\sqrt{4 - x^2}; -2 \leq x \leq 2 \end{cases}$$

$$f(x) = \begin{cases} \sqrt{9 - x^2}; -3 \leq x \leq 3 \end{cases}$$

$$f(x) = \begin{cases} -\sqrt{9 - x^2}; -3 \leq x \leq 3 \end{cases}$$

$$f(x) = \begin{cases} \sqrt{16 - x^2}; -4 \leq x \leq 4 \end{cases}$$

$$f(x) = \begin{cases} -\sqrt{16 - x^2}; -4 \leq x \leq 4 \end{cases}$$

Next, graph the equations on your calculator using the  
Inequalities Application. How do your images compare?

# Graph your work

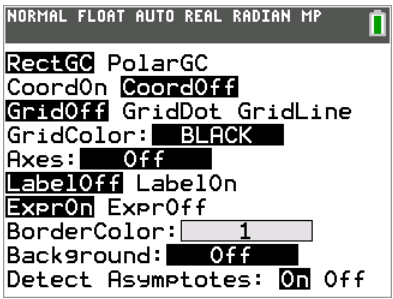
For an uncluttered graph screen:





Toggle to and select CoordOff

Toggle to and select GridOff.

Toggle to Axes and select Off.

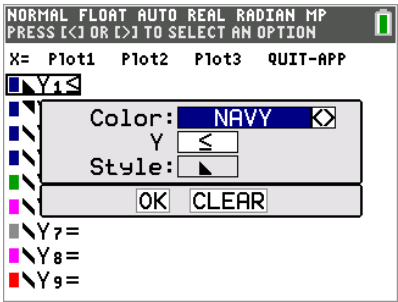




Next, turn on the Inequalities Application:   Select: 5: Inequalz

Enter equations into the   screen

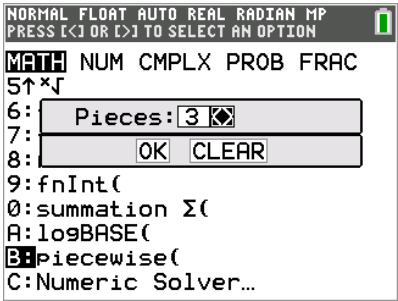
To change colors and inequality symbols: Arrow left until the desired  $Yx =$  line is outlined with a box. Press enter.  
Hint: pay attention to the inequality symbols.

Use the dialogue box to select settings.



To enter multiple functions in a  $Yx =$  row, use the  piecewise template:  Select: B: piecewise(

Use dialogue box to select quantity of pieces per  $Yx =$  line.



  your work when all math is entered. Double check your equations.

# Spring into math - teacher notes

Hidden image reveal: Sunglasses! Share this image with your students when you see fit.

Reminders: Take note of the inequality symbols on Yx lines to get the proper shaded in areas to produce the designs.

When entering multiple functions per Yx line, use the piecewise template.

The last step to fill in the shape is crucial to get the desired reveal.

Experiment! Using color, line and background settings, how could students make the image their own?

How could they alter the math to make their own designs?

