

Graphing nonlinear inequalities

Lesson 10

3.3

9.22.15

I try:

Determine whether $(3,-4)$, $(4,7)$, and $(-1,6)$ are solutions for the inequality $y < (x - 3)^2 + 5$

Substitute the values into the inequalities and check	Plug in $(3, -4)$ $-4 < (3 - 3)^2 + 5$ $-4 < 5$ TRUE
	Plug in $(4,7)$ $7 < (4 - 3)^2 + 5$ $7 < 1^2 + 5$ $7 < 6$ FALSE
	Plug in $(-1,6)$ $6 < (-1 - 3)^2 + 5$ $6 < (-4)^2 + 5$ $6 < 16 + 5$ $6 < 21$ TRUE

We Try:

Determine whether (8,-2) and (18,7) are solutions for the inequality

$$y > \sqrt{x - 4} + 10$$

Substitute the values into the inequalities and check	Plug in (8, -2)
	Plug in (18,7)

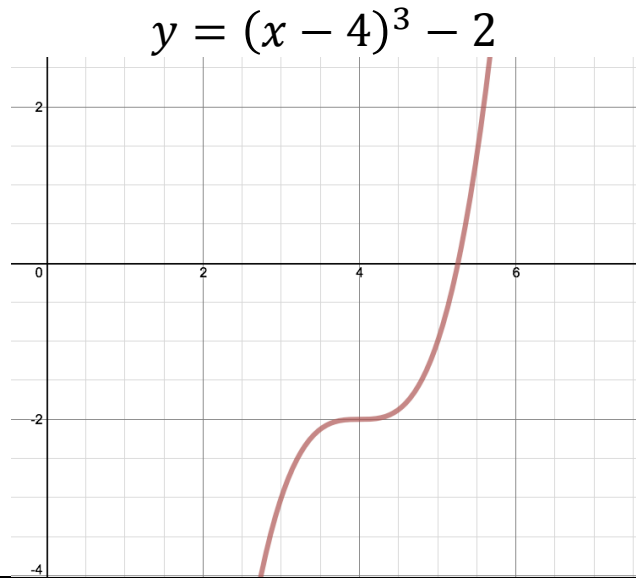
You Try on your whiteboards with your partner:
Right Column explains, Left Column Writes.

Determine whether (1,12) and (-3,7) are solutions for
the inequality
 $y > 2|x|^3 - 7$

Substitute the values into the inequalities and check	Plug in (8, -2)
	Plug in (18,7)

$$\text{Graph } y \geq (x - 4)^3 - 2$$

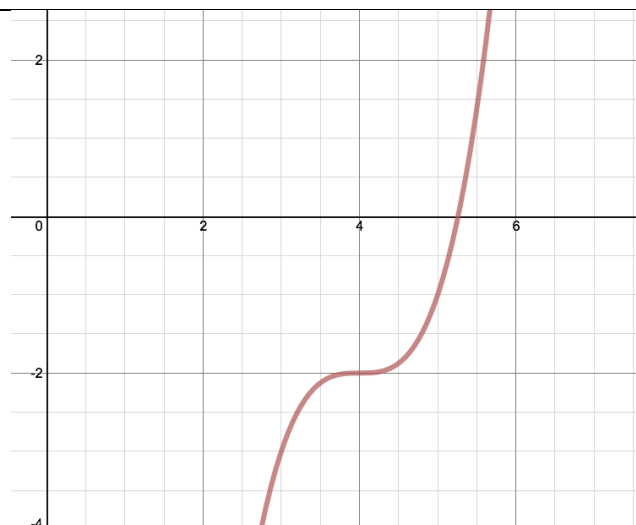
Graph the equation
without the inequality



Use the (0,0) test.

$$\begin{aligned} 0 &\geq (0 - 4)^3 - 2 \\ 0 &\geq -4^3 - 2 \\ 0 &\geq -66 \\ &\text{TRUE} \end{aligned}$$

Shade



We Try:
Graph $y \geq |3x| - 2$

Graph the equation without the inequality	$y = 3x - 2$
Use the (0,0) test. Shade	
Shade	

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You Try in your notebooks.

$$\text{Graph } y < \sqrt{x + 2} - 1$$

Graph the equation without the inequality	Graph $y < \sqrt{x + 2} - 1$
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Use the (0,0) test. Shade	
Shade	

I Try:
Solving inequalities

Solve the inequality

$$2|x + 3| - 2 > 8$$

Isolate the absolute value	$2 x + 3 - 2 > 8$ $2 x + 3 > 10$ $ x + 3 > 5$	
Split into 2 inequalities	$x + 3 > 5$	$x + 3 < -5$
Solve them	$x > 2$	$x < -8$

I Try:

$$|5x - 5| - 5 < -5$$

Isolate the absolute value		
Split into 2 inequalities		
Solve them		

We Try:
 $|5 - x| \leq x$

Split into 2 inequalities		
Solve them		

You Try with your partner on the whiteboards.
 Left Explain, Right Writes.

$$3|x - 4| + 1 > 4$$

