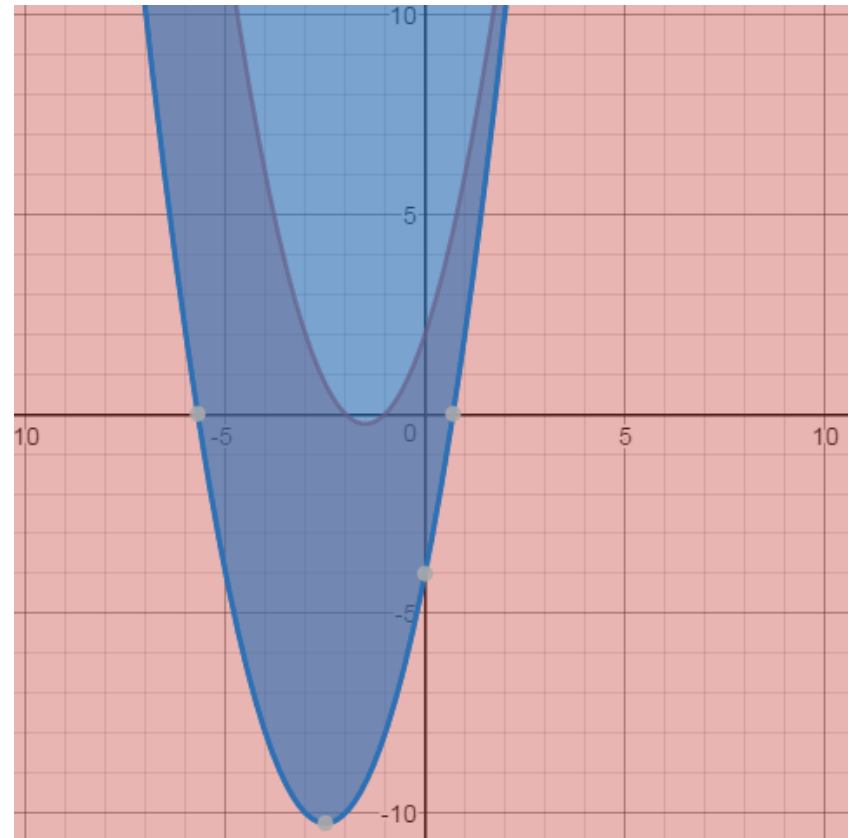
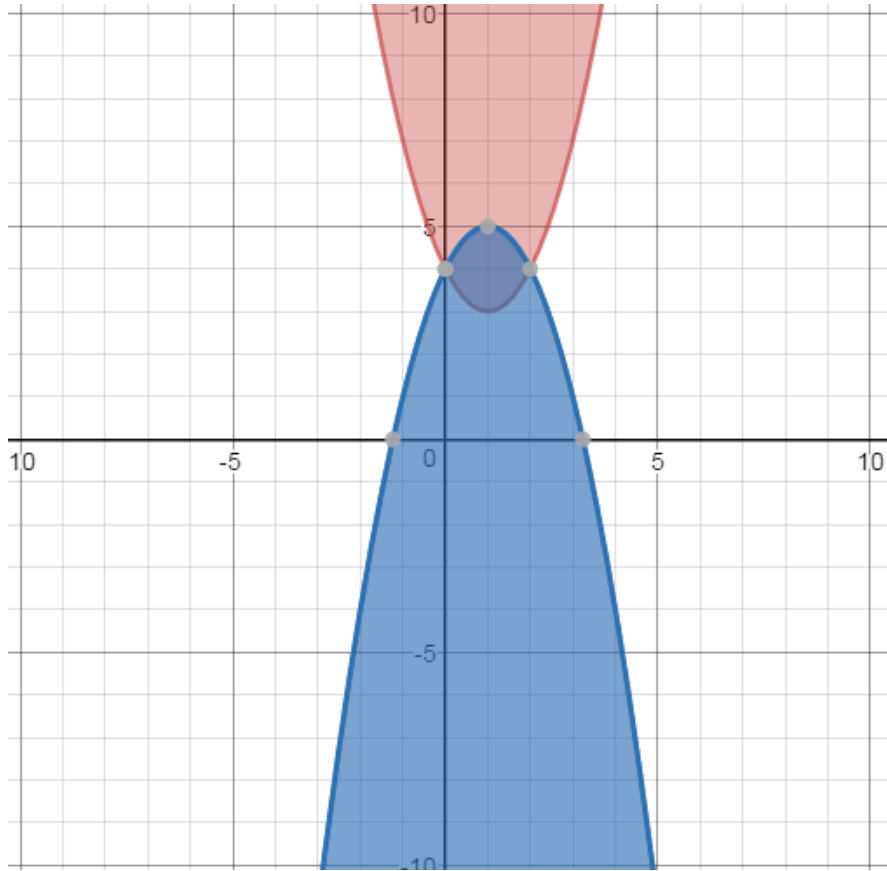


# Warm Up

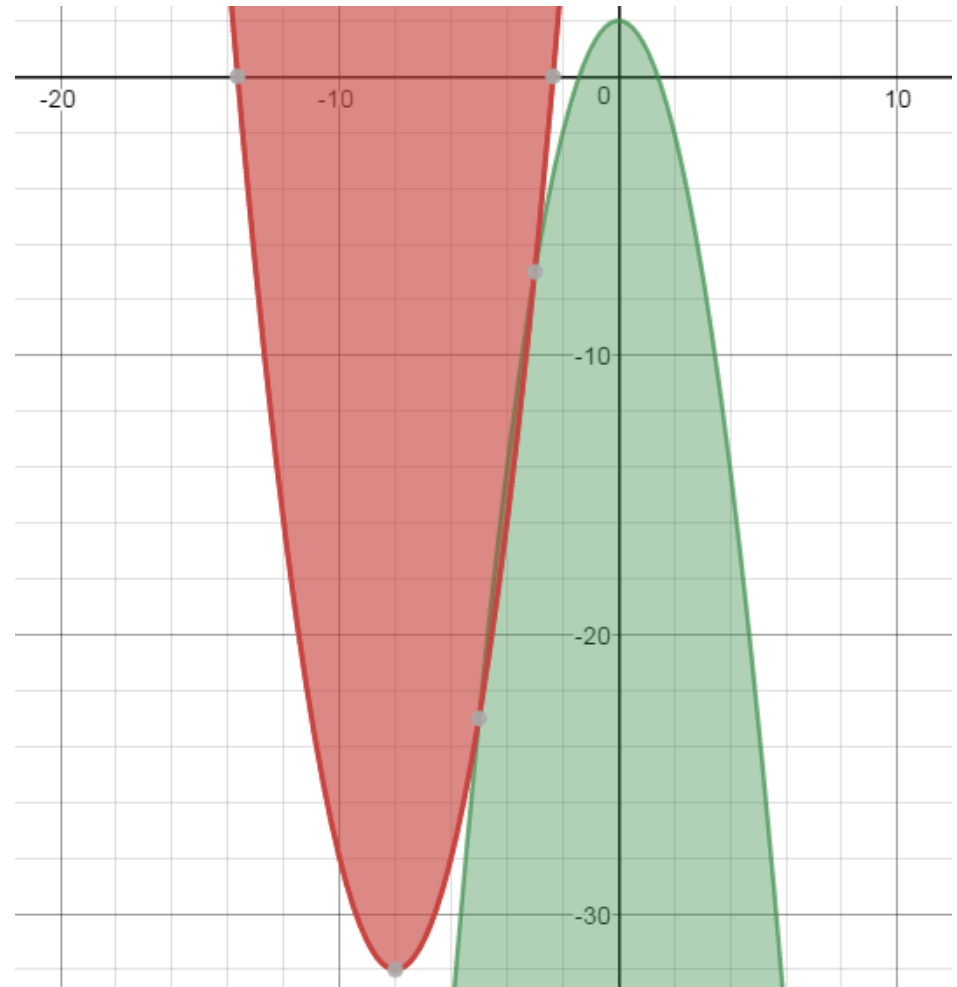
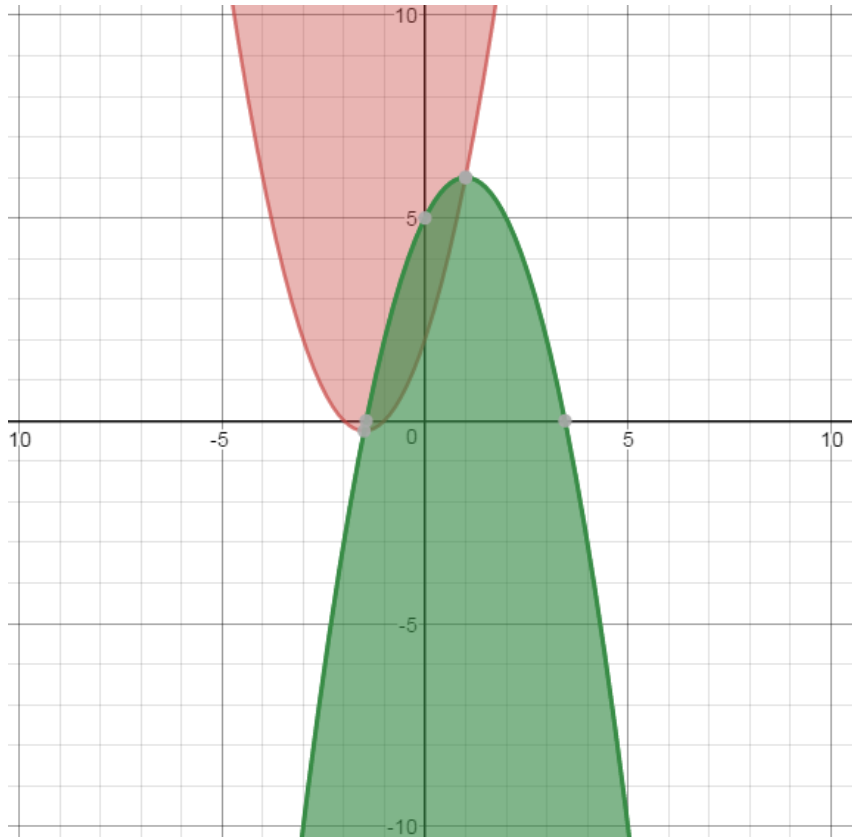
- Graph the following. Label points of intersection.

1. 
$$\begin{cases} y \leq -2x^2 + 12x - 14 \\ y \geq 3x^2 - 12x + 13 \end{cases}$$

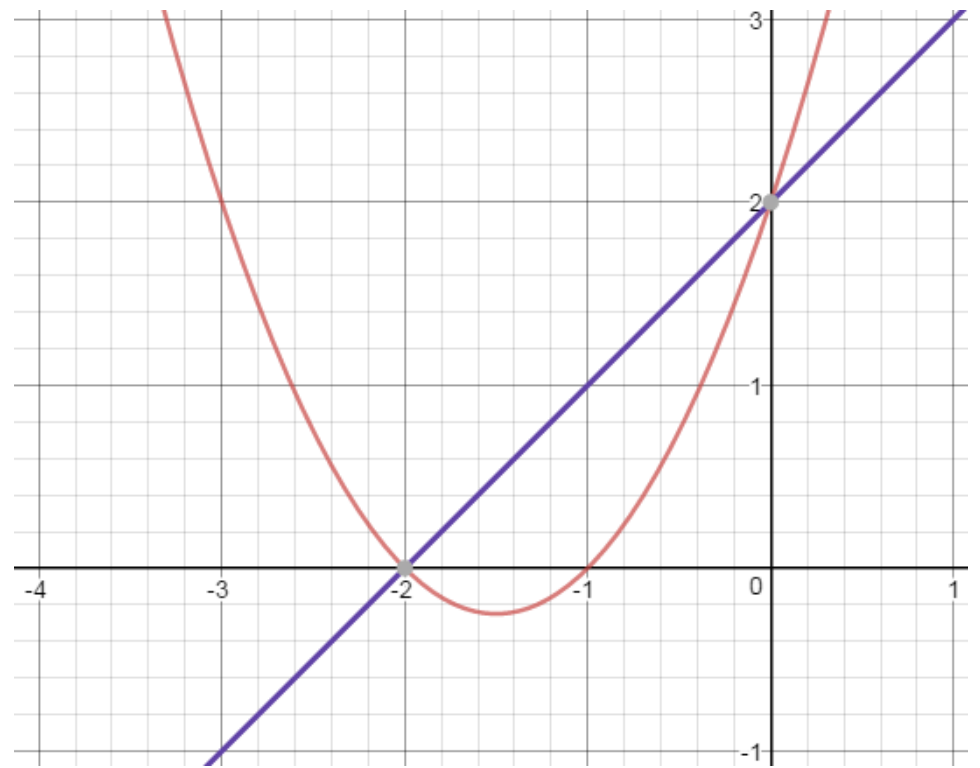
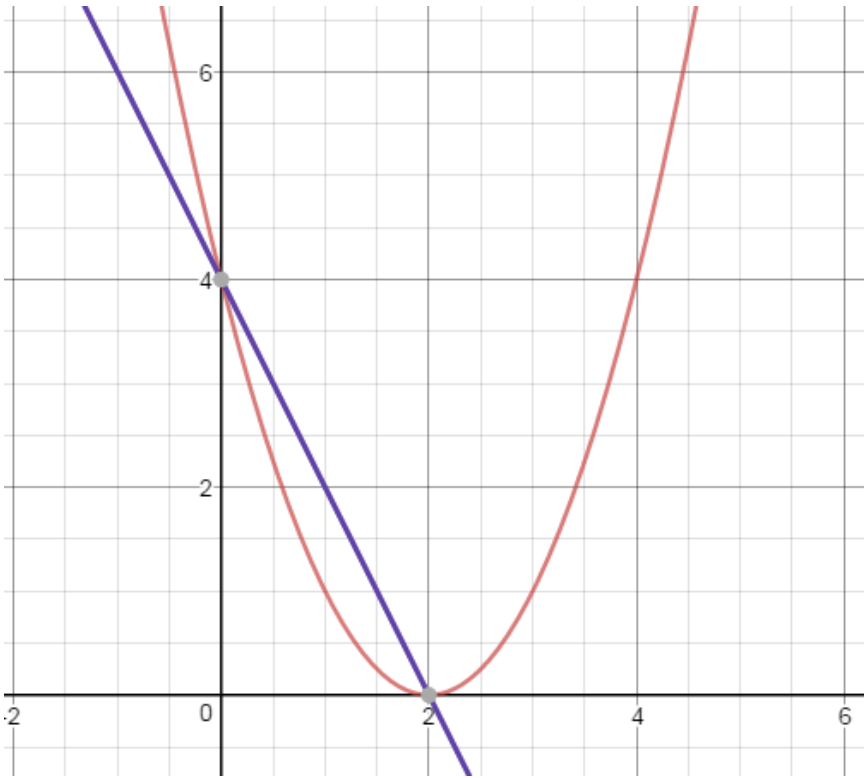
# Homework



# Homework



# Homework



# Graphing Radical Equations

**NC.M2.A-CED.2** Create and graph equations in two variables to represent quadratic, **square root** and inverse variation relationships between quantities.

**NC.M2.F-IF.4** Interpret key features of graphs, tables, and verbal descriptions in context to describe functions that arise in applications relating two quantities, including: domain and range, rate of change, symmetries, and end behavior.

**NC.M2.F-IF.7** Analyze quadratic, **square root**, and inverse variation functions by generating different representations, by hand in simple cases and using technology for more complicated cases, to show key features, including: domain and range; intercepts; intervals where the function is increasing, decreasing, positive, or negative; rate of change; maximums and minimums; symmetries; and end behavior.

# Radical Transformations

- Use what you know about transformation to make conjectures about the following equations with parent function  $y = \sqrt{x}$ .  
Check your conjectures with your groups and your calculator.

$$y = \sqrt{x-5} \quad \text{Right 5}$$

$$y = \sqrt{x-6} \quad \text{down 6}$$

$$y = 2\sqrt{x-3} + 4 \quad \begin{array}{l} \text{Vert stretch 2} \\ \text{R 3 U 4} \end{array}$$

$$y = \sqrt{3x} \quad \begin{array}{l} \text{Horizontal} \\ \text{shrink } \frac{1}{3} \end{array}$$

$$y = -\sqrt{x} - 2 \quad \begin{array}{l} \text{Reflect } x\text{-axis} \\ \text{down 2} \end{array}$$

$$y = \frac{1}{3}\sqrt{x+4} \quad \begin{array}{l} \text{Vertical shrink} \\ \frac{1}{3} \\ \text{L of + 4} \end{array}$$

- Do the graphs look like you expected? Why or why not?

# Practice:

- For the following equation find the:

- Sketch the graph

- Translation  $R5 \cup 3$

- Domain  $[5, \infty)$

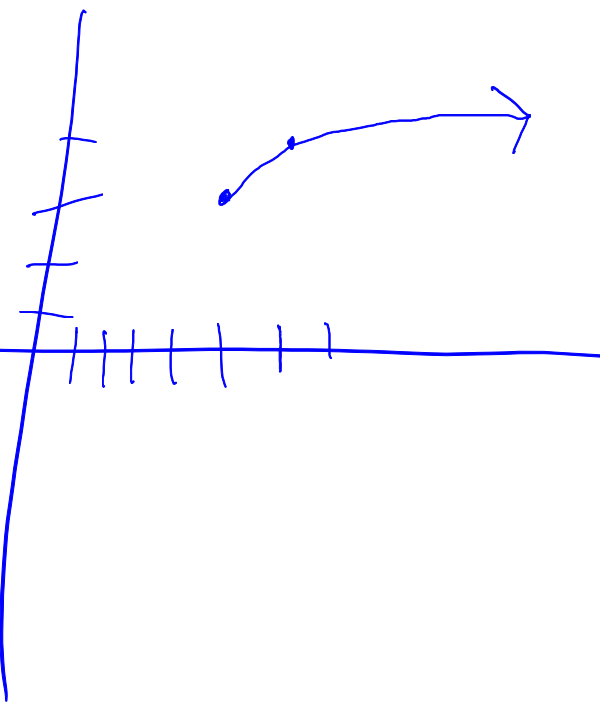
- Range  $[3, \infty)$

- End Behavior  $x \rightarrow 5, y \rightarrow 3$   
 $x \rightarrow \infty, y \rightarrow \infty$

- Increasing Interval  $[5, \infty)$

- Decreasing Interval  $N/A$

$$y = \sqrt{x - 5} + 3$$



# Practice:

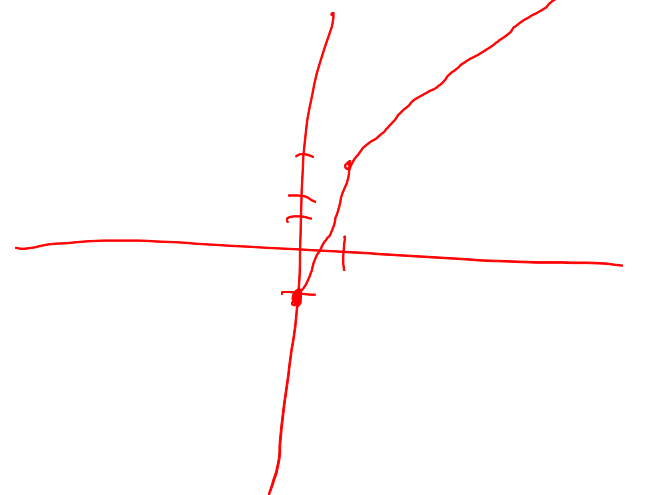
- For the following equation find the:

- Sketch the graph
- Translation *Down 1*
- Domain  $[0, \infty)$
- Range  $[-1, \infty)$
- End Behavior
- Increasing Interval
- Decreasing Interval

*Transformation  
Vert stretch 4*

$$y = 4\sqrt{x} - 1$$

*(0, -1)*





# Practice:

- For the following equation find the:

- Sketch the graph
- Translation
- Domain
- Range
- End Behavior
- Increasing Interval
- Decreasing Interval

$$y = \frac{2}{5}\sqrt{x+4}$$

# Practice:

- For the following equation find the:

- Sketch the graph
- Translation
- Domain
- Range
- End Behavior
- Increasing Interval
- Decreasing Interval

$$y = -\sqrt{x - 6} - 4$$

# Practice:

- For the following equation find the:
  - Sketch the graph
  - Translation
  - Domain
  - Range
  - End Behavior
  - Increasing Interval
  - Decreasing Interval

$$y = \sqrt[3]{x - 2}$$

# Practice:

- For the following equation find the:

- Sketch the graph
- Translation
- Domain
- Range
- End Behavior
- Increasing Interval
- Decreasing Interval

$$y = \sqrt[3]{x} + 6$$

# Practice:

- For the following equation find the:
  - Sketch the graph
  - Translation
  - Domain
  - Range
  - End Behavior
  - Increasing Interval
  - Decreasing Interval

$$y = 2\sqrt[3]{x}$$

# Practice:

- For the following equation find the:

- Sketch the graph
- Translation
- Domain
- Range
- End Behavior
- Increasing Interval
- Decreasing Interval

$$y = -\sqrt[3]{x} + 5$$

# Practice:

- For the following equation find the:

- Sketch the graph
- Translation
- Domain
- Range
- End Behavior
- Increasing Interval
- Decreasing Interval

$$y = \frac{1}{4} \sqrt[3]{x-2} + 5$$