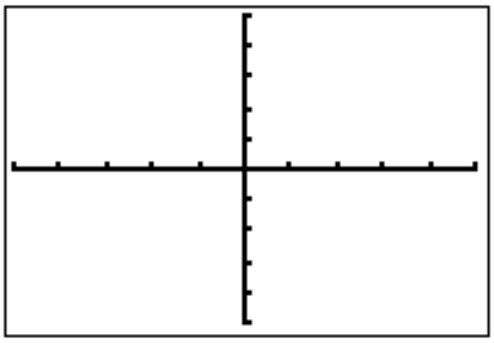
Name_____ Algebra 2 *Radical Functions*

Graph and sketch each set of equations, noting how the graph is affected by changes in the equation. State the domain and range for each function.

Set 1:

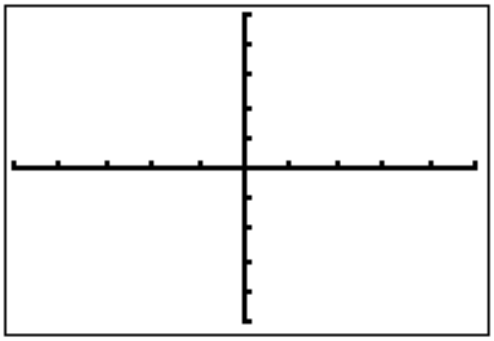


y = $\sqrt{x}$ y = $2\sqrt{x}$ y = $\frac{1}{2}\sqrt{x}$ y = $-3\sqrt{x}$

D:_____ D:_____ D:_____ D:_____

R:_____ R:_____ R:_____ R:_____

Set 2:

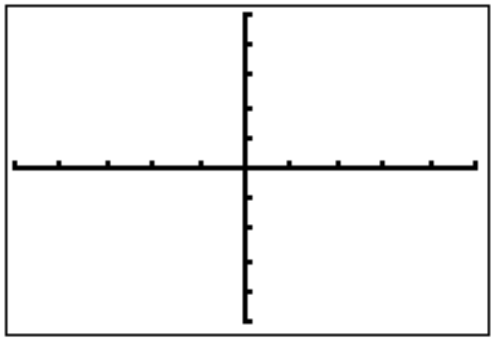


y = $\sqrt[3]{x}$ y = $2\sqrt[3]{x}$ y = $\frac{1}{2}\sqrt[3]{x}$ y = $-3\sqrt[3]{x}$

D:_____ D:_____ D:_____ D:_____

R:_____ R:_____ R:_____ R:_____

Set 3:

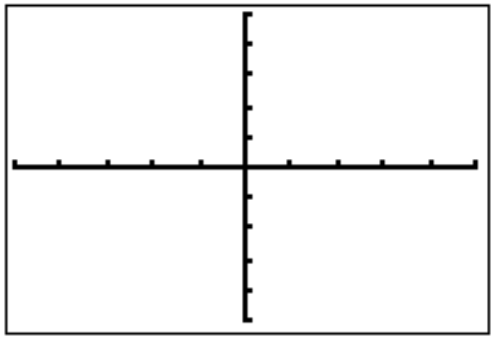


y = $\sqrt{x}$ y = $\sqrt{x-3}$ y = $\sqrt{x+3}$

D:_____ D:_____ D:_____

R:_____ R:_____ R:_____

Set 4:

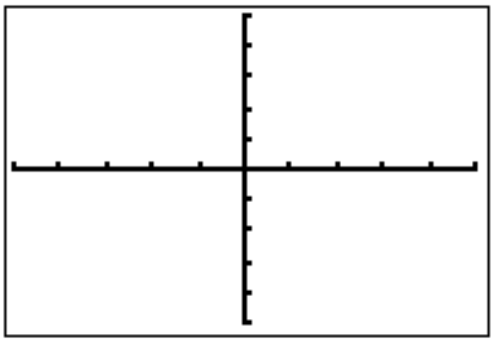


y = $\sqrt[3]{x}$ y = $\sqrt[3]{x-2}$ y = $\sqrt[3]{x+2}$

D:_____ D:_____ D:_____

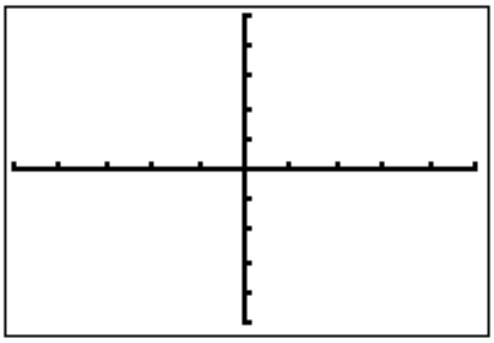
R:_____ R:_____ R:_____

Set 5:



| $y = \sqrt{x}$ | $y = \sqrt{x} - 4$ | $y = \sqrt{x} + 4$ |
|---|---|---|
| D:_____ | D:_____ | D:_____ |
| R:_____ | R:_____ | R:_____ |

Set 6:



| $y = \sqrt[3]{x}$ | $y = \sqrt[3]{x} - 4$ | $y = \sqrt[3]{x} + 4$ |
|---|---|---|
| D:_____ | D:_____ | D:_____ |
| R:_____ | R:_____ | R:_____ |

7. Predict how the following graphs will differ from the parent graph $y = \sqrt{x}$. Then verify your prediction.

a. $y = 2\sqrt{x+1} - 7$

b. $y = -\sqrt{x-2} + 5$

8. Predict how the following graphs will differ from the parent graph $y = \sqrt[3]{x}$. Then verify your prediction.

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

b. $y = 3\sqrt[3]{x-5} + 1$

9. Consider the equations:

$y = a\sqrt{x-h} + k$ and $y = a\sqrt[3]{x-h} + k$

Explain how the values of a, h, and k affect the graph of the parent functions $y = \sqrt{x}$ and $y = \sqrt[3]{x}$.