

Name: Key

Hour: _____

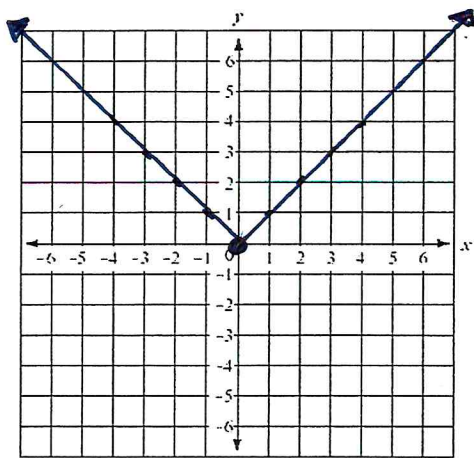
Date: _____

Parent Functions Test Review Guide

Write the equation of the parent function and sketch its graph.

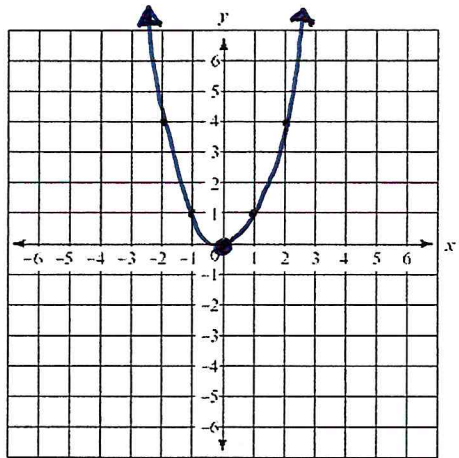
Absolute value

$$f(x) = |x|$$



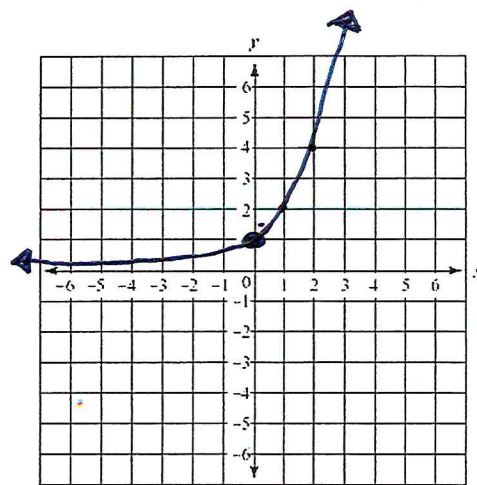
Polynomial (Quadratic)

$$f(x) = x^2$$



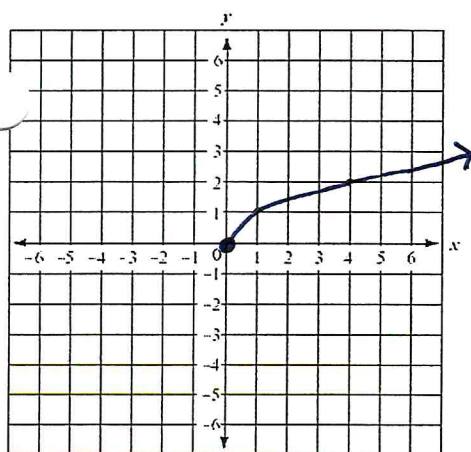
Exponential Growth

$$f(x) = 2^x$$



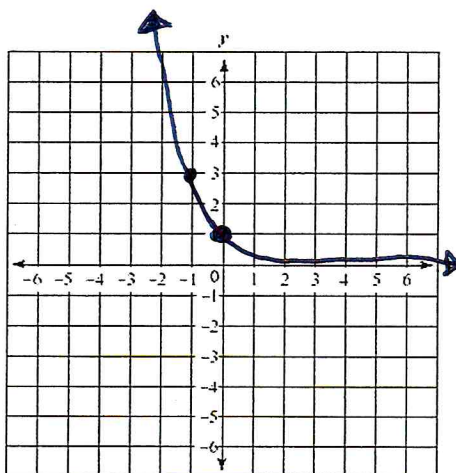
Radical (Square Root)

$$f(x) = \sqrt{x}$$



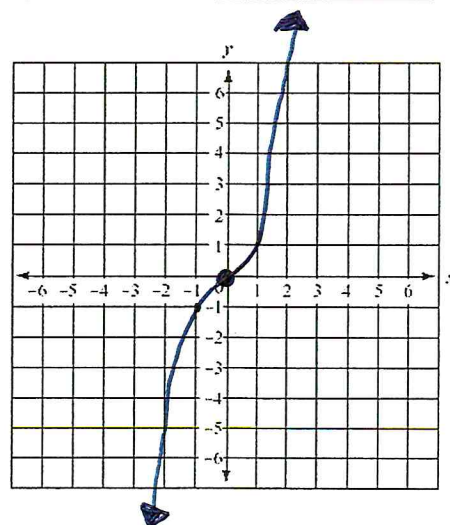
Exponential Decay

$$f(x) = \left(\frac{1}{3}\right)^x$$



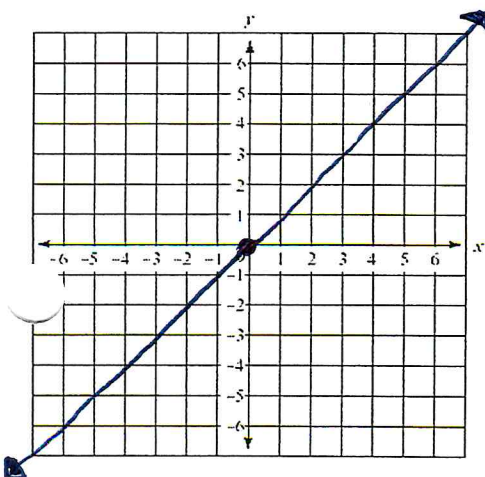
Polynomial (Cubic)

$$f(x) = x^3$$



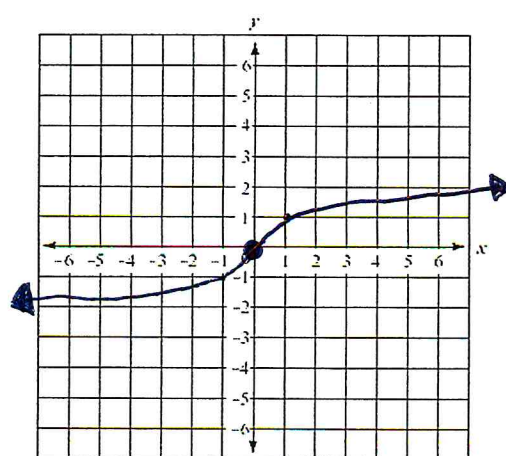
Linear

$$f(x) = x$$

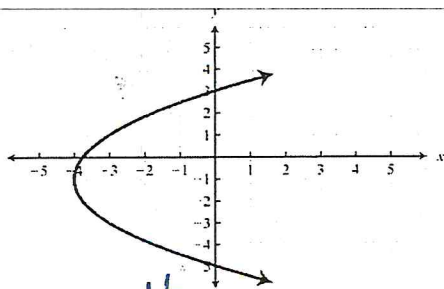


Radical (Cube root)

$$f(x) = \sqrt[3]{x}$$

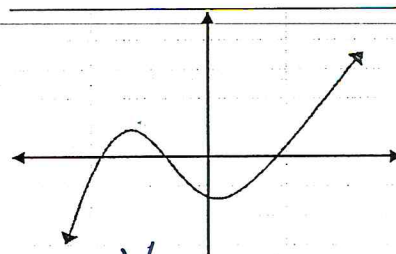


Determine if the following graphs represent functions. Describe your reasoning using the words DOMAIN and RANGE.



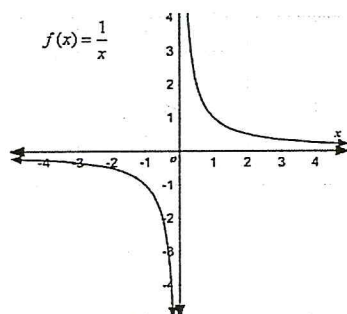
Function? No

Explanation: The domain and range are not one-to-one



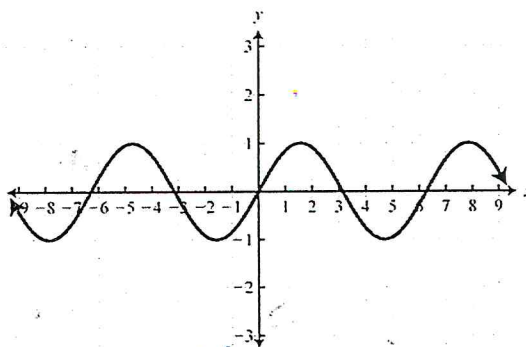
Function? Yes

Explanation: The domain and range are one-to-one



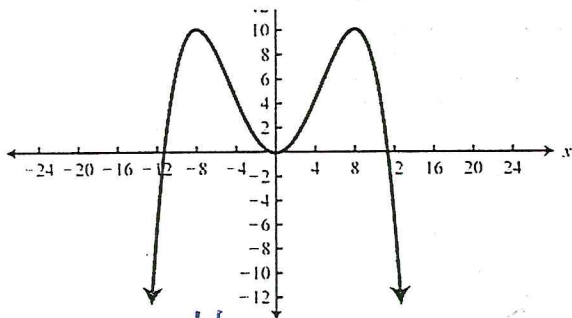
Function? Yes

Explanation: See above



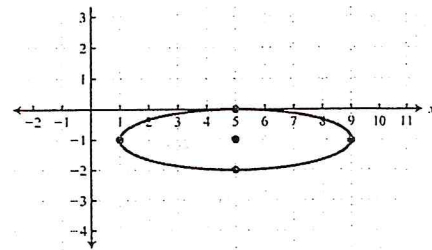
Function? Yes

Explanation: See above



Function? Yes

Explanation: See above



Function? No

Explanation: See above

List the key features of each of the following graphs. Use interval notation when necessary.

Domain: $(-\infty, +\infty)$

Range: $(-\infty, 4]$

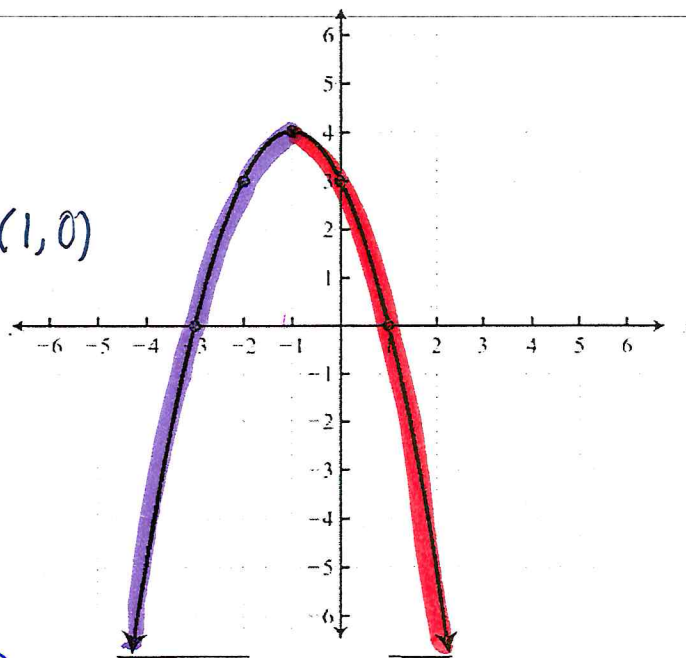
Increasing: $(-\infty, -1)$

Decreasing: $(-1, +\infty)$

Constant: N/A

x-intercepts: $(-3, 0), (1, 0)$

y-intercepts: $(0, 3)$



End Behavior:

Left: $x \rightarrow -\infty$
 $y \rightarrow -\infty$

Right: $x \rightarrow +\infty$
 $y \rightarrow -\infty$

Domain: $(-\infty, 4]$

Range: $[0, +\infty)$

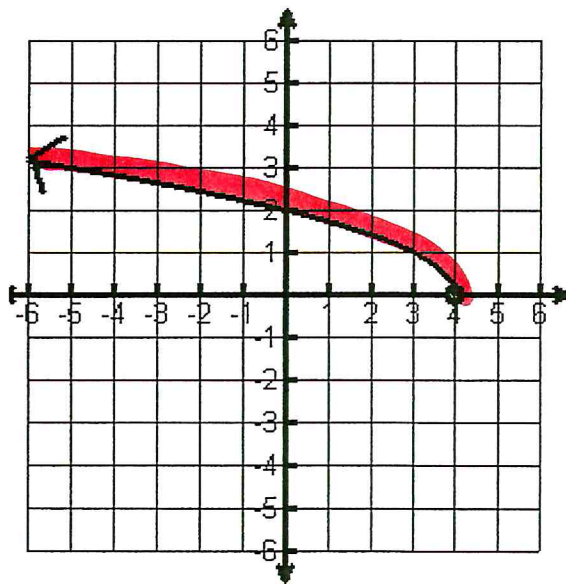
Increasing: N/A

Decreasing: $(-\infty, 4)$

Constant: N/A

x-intercepts: $(4, 0)$

y-intercepts: $(0, 2)$



End Behavior:

Left: $x \rightarrow -\infty$
 $y \rightarrow +\infty$

Right: None!

Domain: $(-\infty, +\infty)$

Range: $(-\infty, +\infty)$

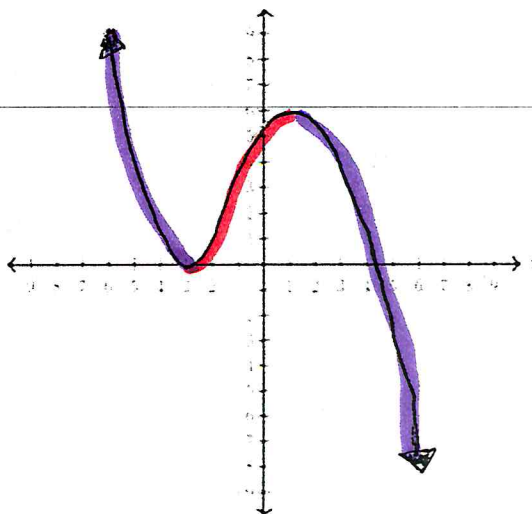
Increasing: $(-3, 1)$

Decreasing: $(-\infty, -3) \cup (1, +\infty)$

Constant: N/A

x-intercepts: $(-3, 0)$
 $(4, 0)$

y-intercepts: $(0, 5)$



End Behavior:

Left: $x \rightarrow -\infty$
 $y \rightarrow +\infty$

Right: $x \rightarrow +\infty$
 $y \rightarrow -\infty$

Domain: $(-\infty, +\infty)$

Range: $(-\infty, 3]$

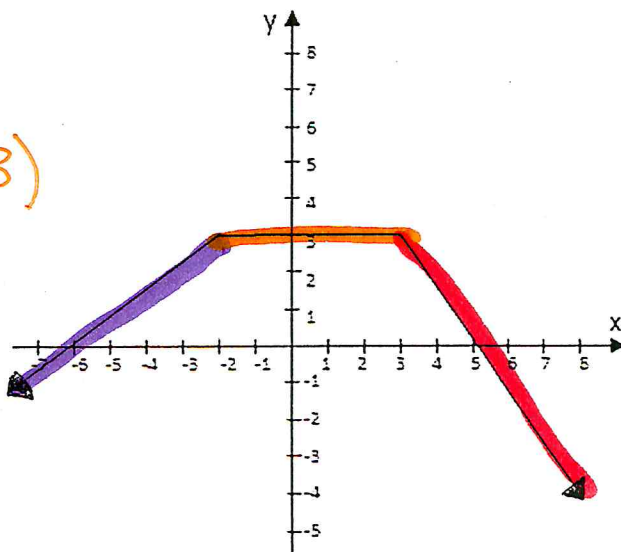
Increasing: $(-\infty, -2)$

Decreasing: $(3, +\infty)$

Constant: $(-2, 3)$

x-intercepts: $(-5, 0), (5, 0)$

y-intercepts: $(0, 3)$

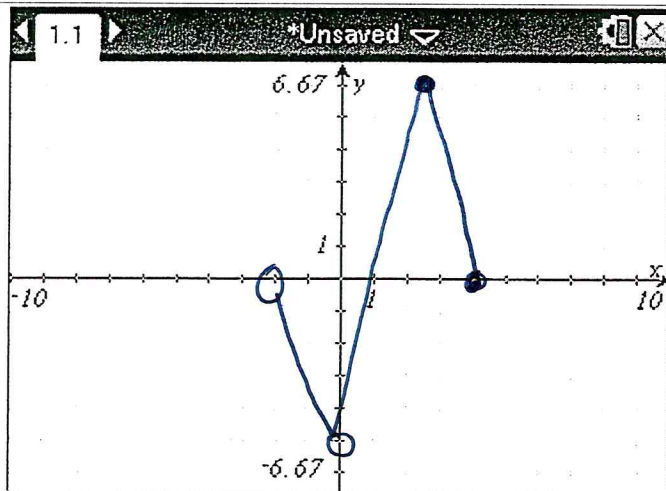


End Behavior:

Left: $x \rightarrow -\infty$
 $y \rightarrow -\infty$

Right: $x \rightarrow +\infty$
 $y \rightarrow -\infty$

Sketch a *function* that meets the following conditions.

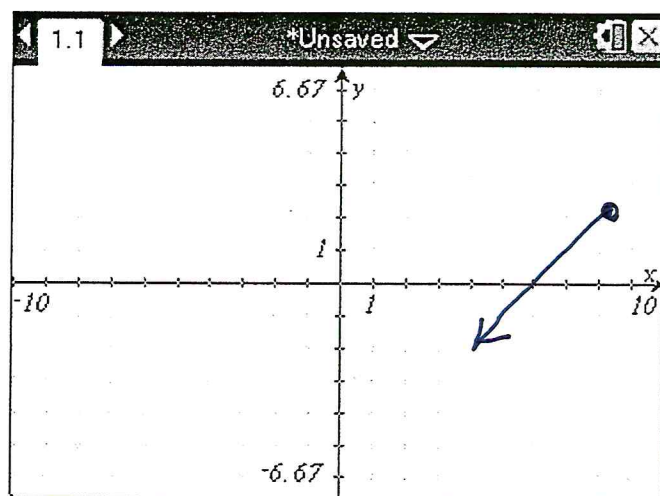


Domain: $(-2, 4]$

Range: $(-5, 6]$

Domain: $(-\infty, 8]$

Range: $(-\infty, 2]$



Domain: $(-4, 6)$

Range: $[-3, 5]$

With at least one increasing and at least one decreasing interval.

