

Name: _____

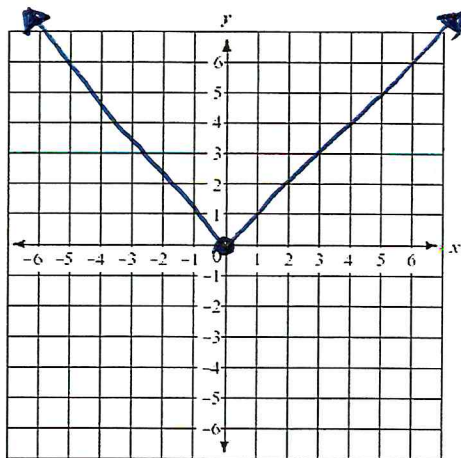
Hour: _____

Date: _____

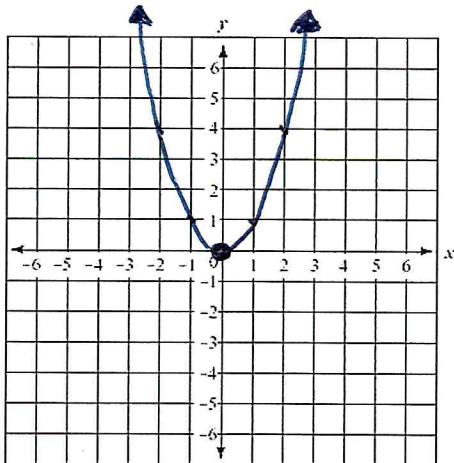
Parent Functions Test Review Guide HONORS

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

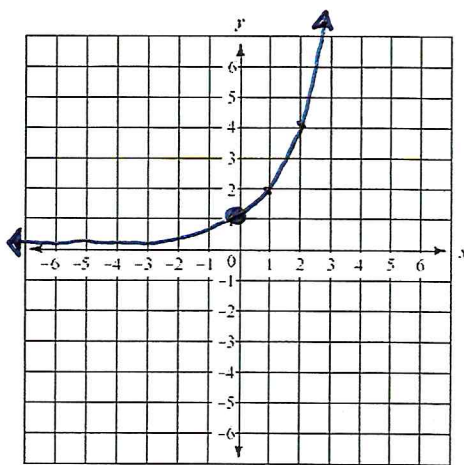
Absolute value $f(x) = |x|$



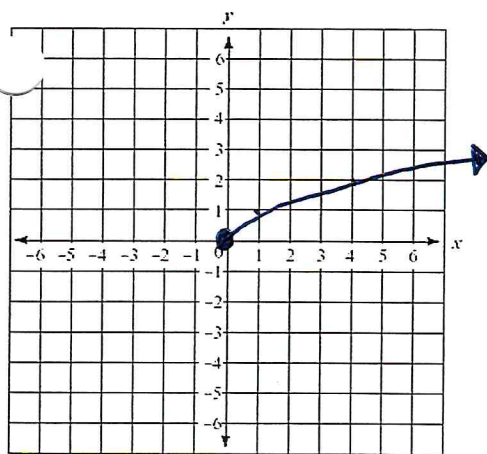
Polynomial (Quadratic) $f(x) = x^2$



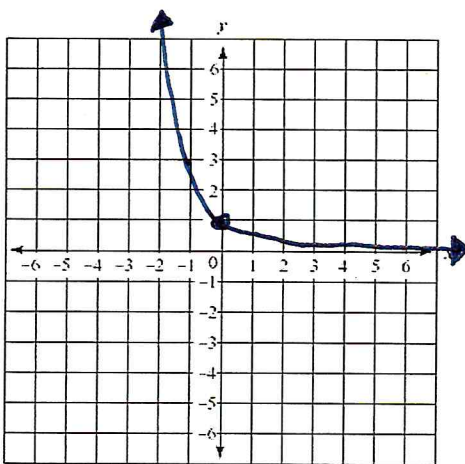
Exponential Growth $f(x) = 2^x$



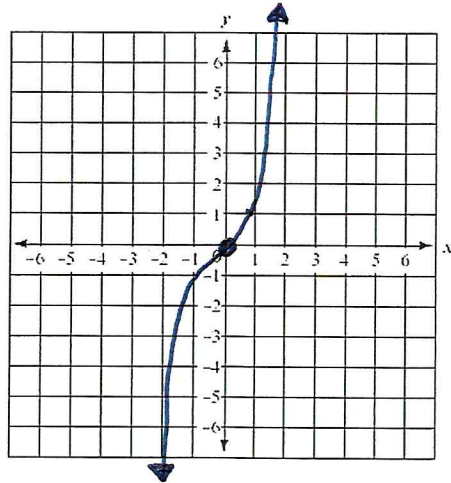
Radical (Square Root) $f(x) = \sqrt{x}$



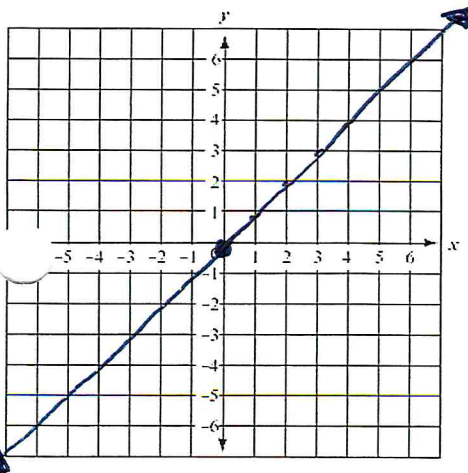
Exponential Decay $f(x) = \left(\frac{1}{3}\right)^x$



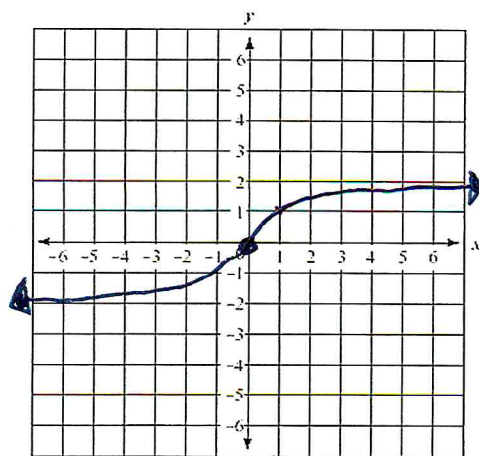
Polynomial (Cubic) $f(x) = x^3$



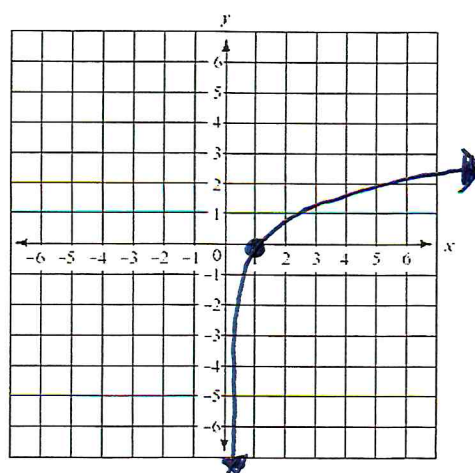
Linear $f(x) = x$



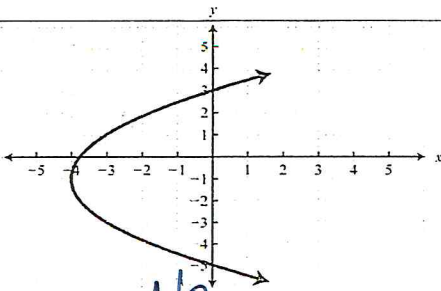
Radical (Cube root) $f(x) = \sqrt[3]{x}$



Logarithm $f(x) = \log(x)$

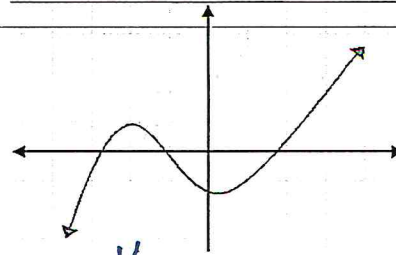


Determine if the following graphs represent functions. Describe your reasoning using the words DOMAIN and RANGE.



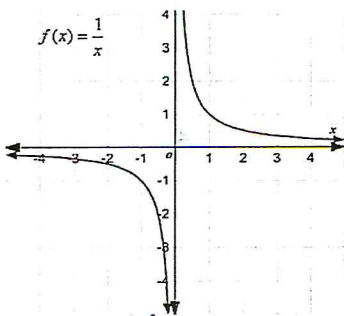
Function? No

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



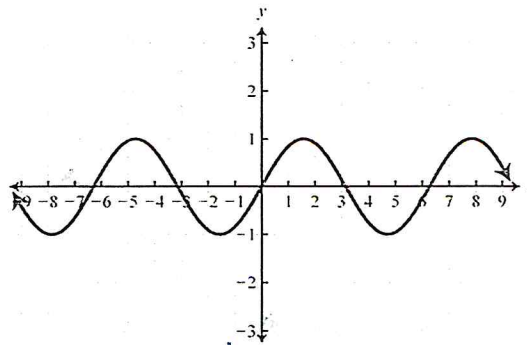
Function? Yes

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



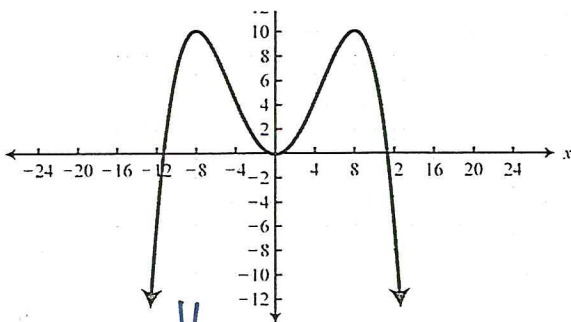
Function? Yes

Explanation: See above



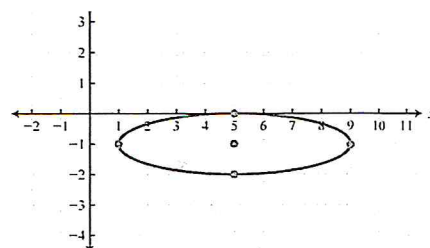
Function? Yes

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: $(-1, +\infty)$

Positive: $(-3, 1)$

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

End Behavior:

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

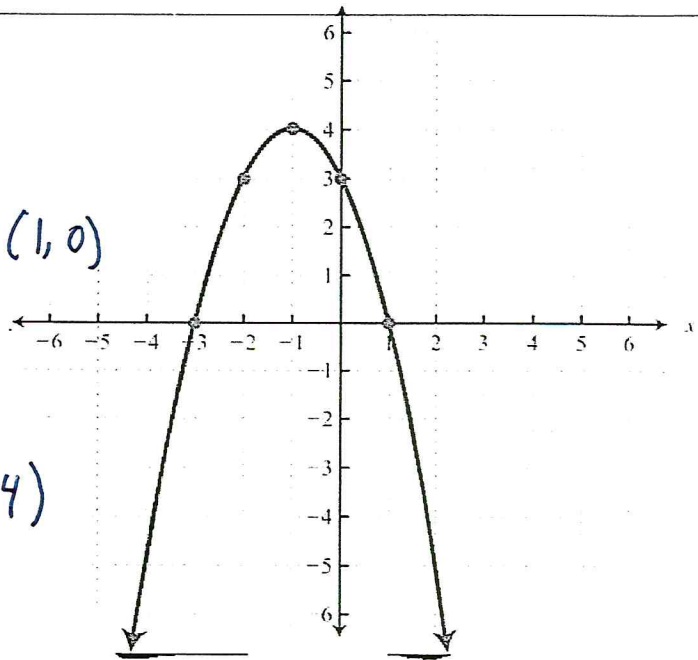
Right: $x \rightarrow +\infty$
 $y \rightarrow -\infty$

Constant: NA

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

y-intercepts: $(0, 3)$

Max/Min: Max: $(-1, 4)$



Domain: $(-\infty, 4]$

Range: $[0, +\infty)$

Increasing: NA

Decreasing: $(-\infty, 4)$

Positive: $(-\infty, 4)$

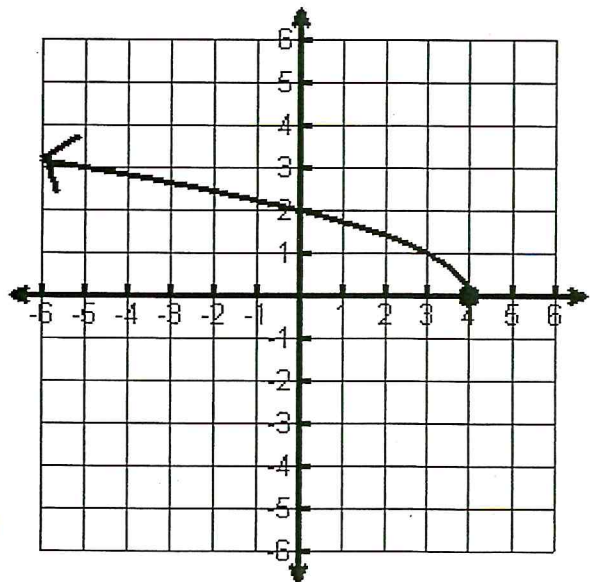
Negative: NA

Constant: NA

x-intercepts: $(4, 0)$

y-intercepts: $(0, 2)$

Max/Min: Min: $(4, 0)$



End Behavior:

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

Right: None

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

Constant: NA

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

Increasing: $(-3, 1)$

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

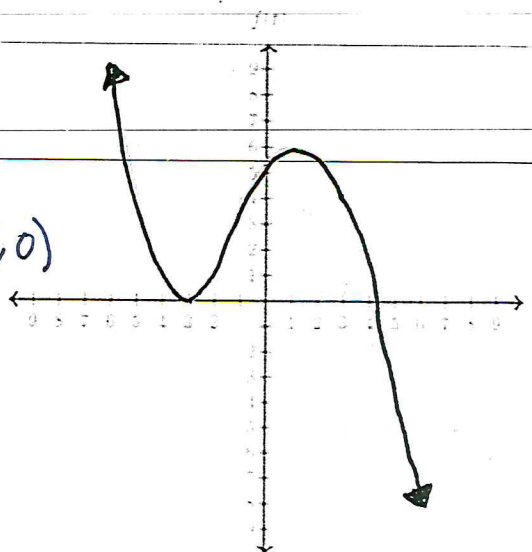
y-intercepts: $(0, 5)$

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

Max/Min: None

Positive: $(-\infty, 4)$

Negative: $(4, +\infty)$



End Behavior:

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

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

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

Range: $(-\infty, 3]$

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

Constant: $(-2, 3)$

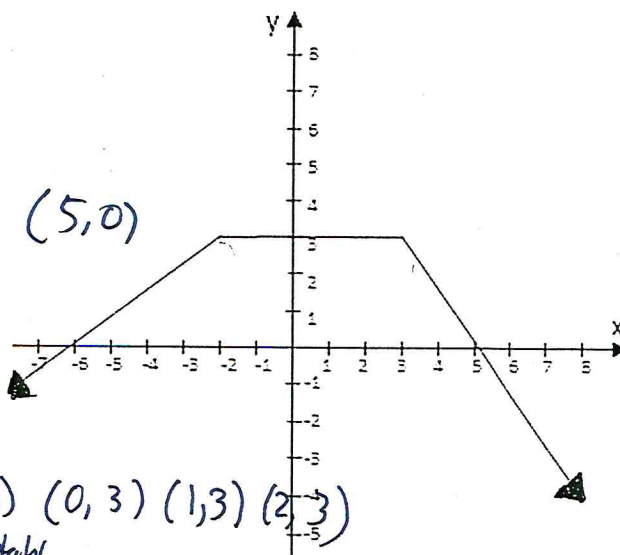
x-intercepts: $(-5, 0), (5, 0)$

y-intercepts: $(0, 3)$

Decreasing: $(3, +\infty)$

Max/Min:

max: $(-2, 3), (-1, 3), (0, 3), (1, 3), (2, 3)$
any acceptable



Positive: $(-5, 5)$

Negative:

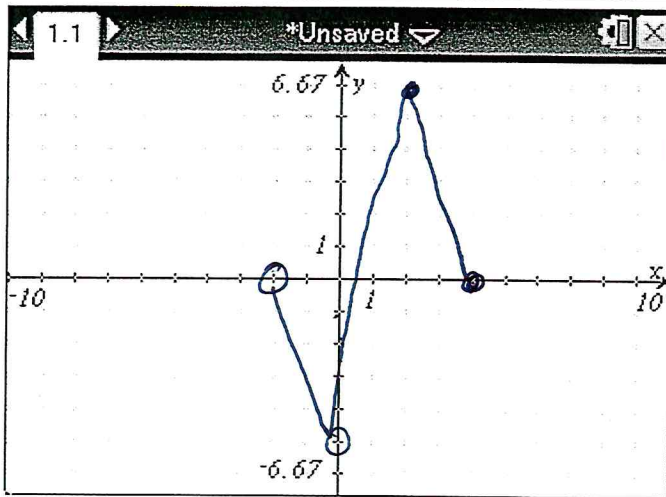
$(-\infty, -5) \cup (5, +\infty)$

End Behavior:

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

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

Sketch a function that meets the following conditions:

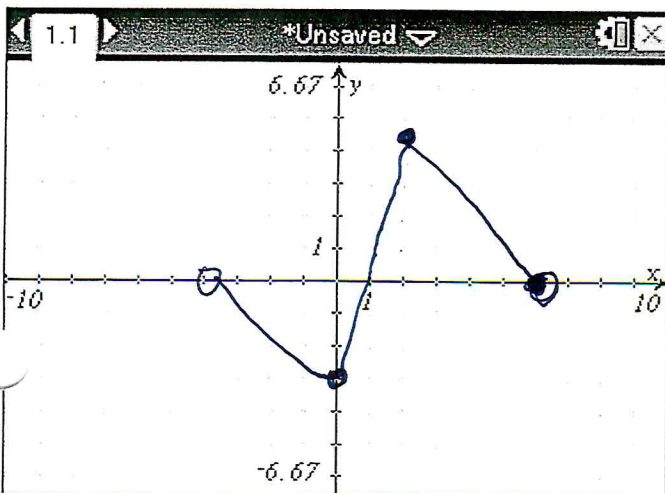
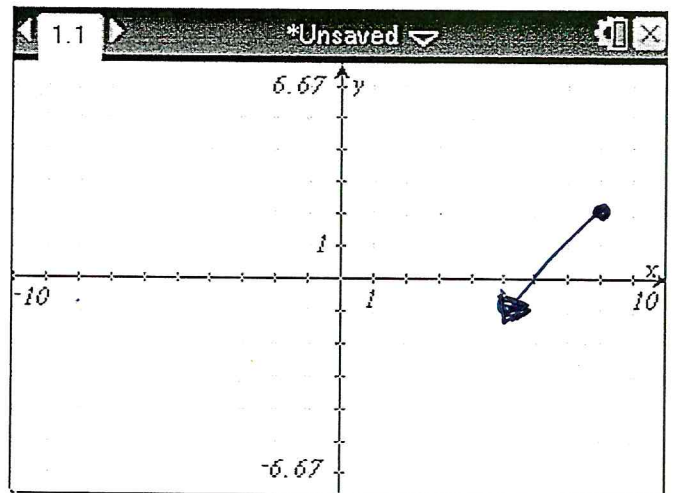


Domain: $[-2, 4]$

Range: $[-5, 6]$

Domain: $(-\infty, 8]$

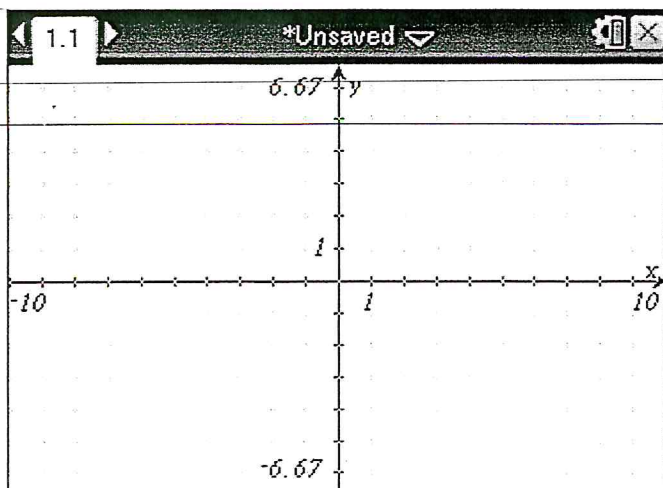
Range: $(-\infty, 2]$



Domain: $[-4, 6]$

Range: $[-5, 6]$

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



Domain: $(-6, 7]$

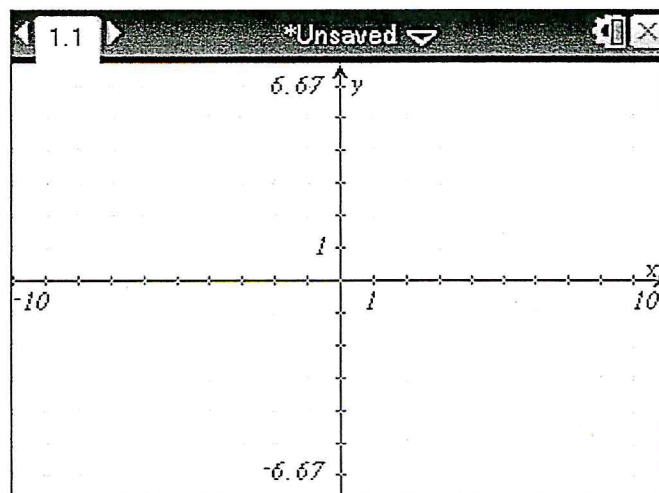
Range: $(-4, 5]$

With a decreasing interval of $(-6, 4)$
and an increasing interval of $(4, 7)$

Domain: $(0, +\infty)$

Range: $(4, +\infty)$

With *both* a vertical and
horizontal asymptote.



Factor

$$x^2 - 6x + 5$$

$$2x^2 + 3x - 9$$