

1.2 Functions and Graphs

Objectives:

- I can find the domain and range of a function algebraically and graphically
- I can determine symmetry of a function
- I can graph a piecewise function

Express the area of a square as a function of side length

Express the volume of a sphere as a function of radius and diameter

Definitions

Function:

Domain:

Range:

Increasing:

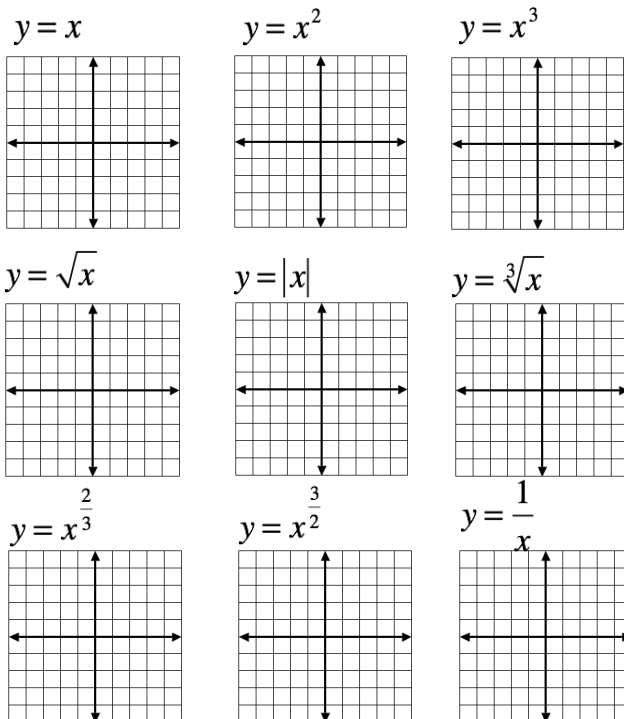
Decreasing:

x-intercept:

y-intercept:

End Behavior:

Review of Parent Functions



Function Transformations Review

$$a \cdot f(b(x-h)) + k$$

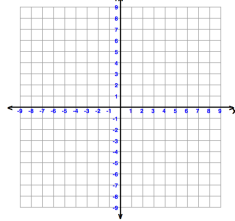
State the transformations of the following functions

$$f(x) = -\frac{1}{2}\sqrt{x+3}$$

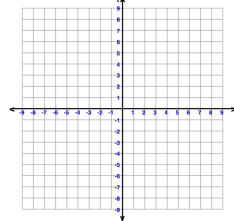
$$g(x) = \frac{2}{x-3} + 4$$

Sketch the following

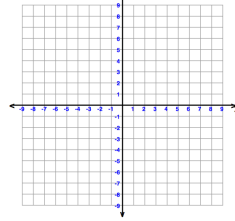
1. a) $y = e^x$



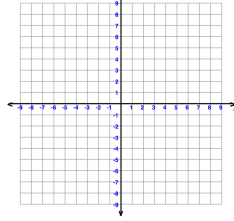
b) $y = -e^x$



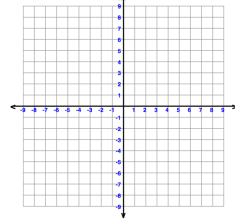
c) $y = e^{x+3}$



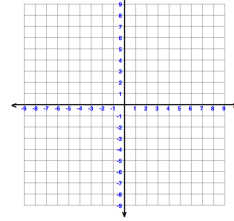
d) $y = e^{-x}$



e) $y = e^x + 1$

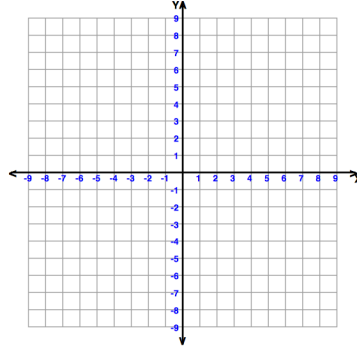


f) $y = -e^{-x} - 3$



Graph and analyze the following function

$$f(x) = \ln(x+2)$$



Domain:

Range:

Increasing:

Decreasing:

x-intercept(s):

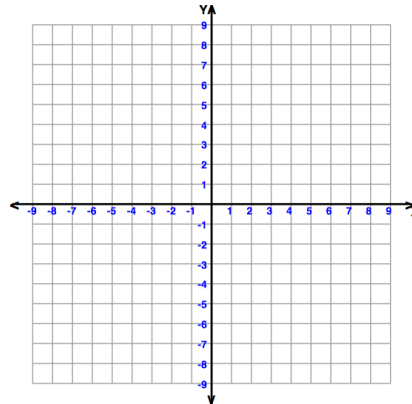
y-intercept:

End Behavior:

Asymptote Behavior:

Graph and analyze the following function

$$g(x) = \frac{1}{x-4} - 3$$



Domain:

Range:

Increasing:

Decreasing:

x-intercept(s):

y-intercept:

End Behavior:

Asymptote Behavior:

Finding Domain

Domain restrictions: (RS #22)

- If $f(x) = \frac{1}{x}$, then $x \neq 0$

- If $f(x) = \log_b x$, then $x > 0$

- If $f(x) = \sqrt{x}$, then $x \geq 0$

Find the domain of each function algebraically

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

b. $f(x) = \frac{1}{x+5}$

c. $g(x) = \sqrt{4-x^2}$

d. $g(x) = \ln(x-3)$

HW 1.2 #53 (b)

$$(f \circ g)(x) = f(g(x))$$