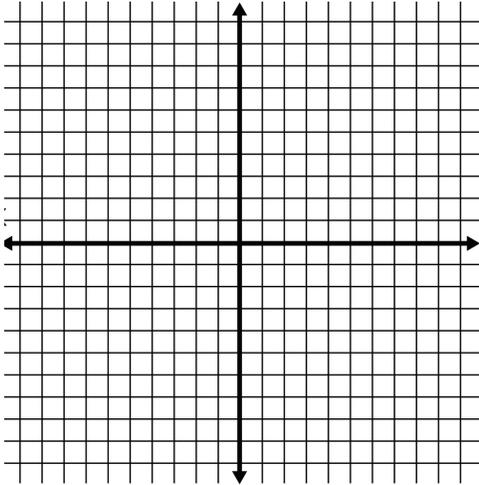




## Building a Library



Today we will look at six parent functions and explore their basic properties. Draw each of the graphs below without the aid of your calculator. Fill in at least three ordered pairs in your table and determine the domain and range of each curve. Find both intercepts, as well as the intervals on which the function is increasing and decreasing.



$$f(x) = x$$

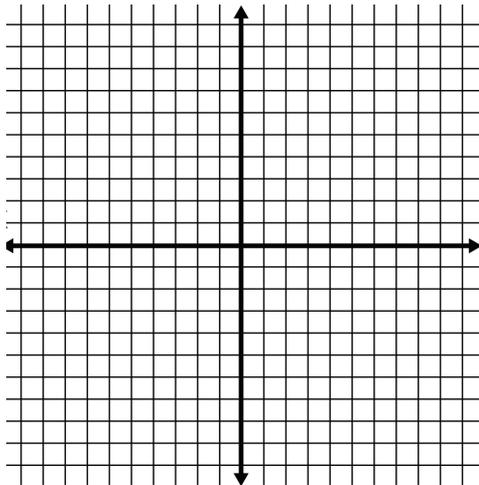
$x$	$f(x)$

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

X-intercept: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

Increasing on \_\_\_\_\_ Decreasing on \_\_\_\_\_



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

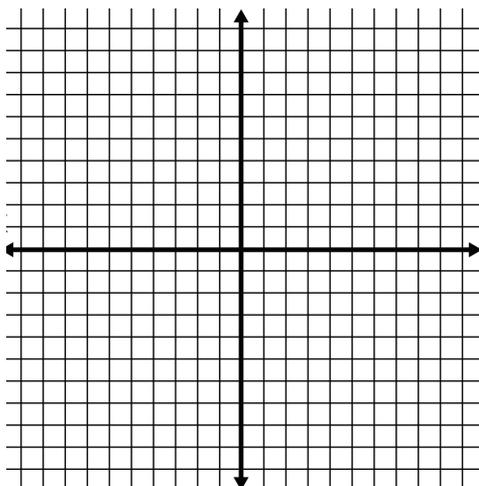
$x$	$f(x)$

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

X-intercept: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

Increasing on \_\_\_\_\_ Decreasing on \_\_\_\_\_



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

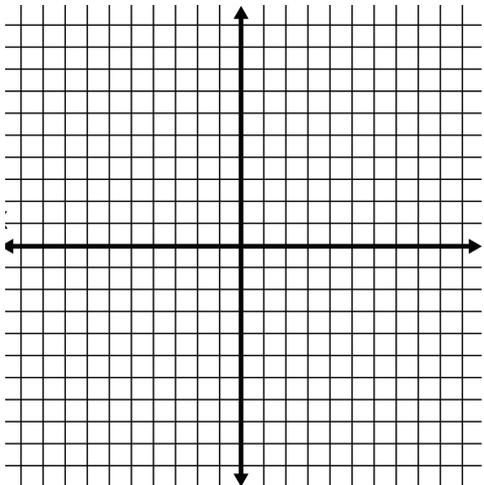
$x$	$f(x)$

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

X-intercept: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

Increasing on \_\_\_\_\_ Decreasing on \_\_\_\_\_



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

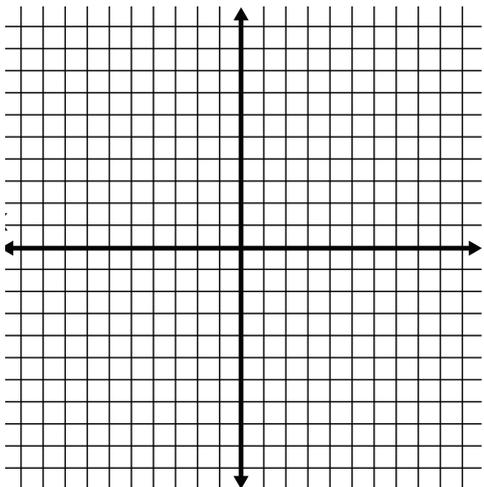
$x$	$f(x)$

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

X-intercept: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

Increasing on \_\_\_\_\_ Decreasing on \_\_\_\_\_



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

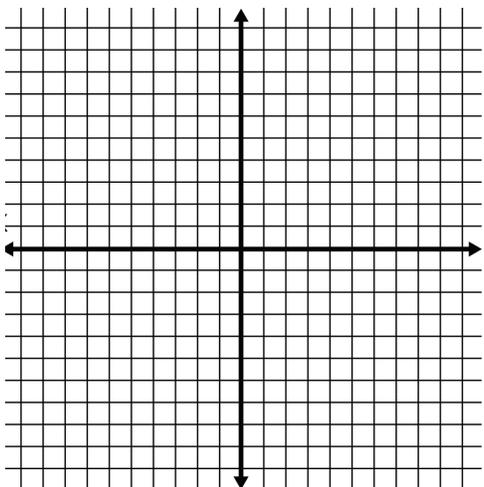
$x$	$f(x)$

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

X-intercept: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

Increasing on \_\_\_\_\_ Decreasing on \_\_\_\_\_



$$f(x) = \frac{1}{x}$$

$x$	$f(x)$

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

X-intercept: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

Increasing on \_\_\_\_\_ Decreasing on \_\_\_\_\_

## Lesson 3.1 – A Library of Parent Functions

QuickNotes

### Check Your Understanding

1. Which parent function(s) demonstrate a constant rate of change?

2. Identify the parent function in each of the following equations:

a.  $f(x) = \frac{2}{x-3}$

b.  $g(x) = 4x^2 + 5x^3 - 1$

c.  $h(x) = -|7x - 4|$

3. Determine if the relationship is linear, quadratic, or neither. How do you know?

a.

x	y
-7	20
-5	18
-3	14
-1	8
1	0

b.

Hours studied	Points earned on test
0.5	62
1	70
2	86
2.5	92
3	98

4. Investigate the range of each parent function below over the interval  $0 < x < 1$ . Then order the ranges from least to greatest.

Identity function, reciprocal function, quadratic function, cubic function, square root function