5-3 Function Tables and Graphs

Find the range value for each of the corresponding domain value.

Evaluate $y = x^2 - 5$ for $x = -3$

$y = (-3)^2 - 5$

$y = 4$

Evaluate $r = -5d + 8$ for $d = 6$

$r = -5(6) + 8$

$r = -22$

Evaluate $y = |x| + 5$ for $x = -7$

$y = |-7| + 5$

$y = 12$

You may see these functions written in **function notation** where the $y =$ is replaced with $f(x) =$. The two mean exactly the same thing but $f(x) =$ gives you more flexibility and more information.

Evaluate $f(x) = 3x - 5$ for $f(3)$

$f(3) = 3(3) - 5$

$f(3) = 4$

Evaluate $g(x) = 3^x$ for $g(4)$

$g(4) = 3^4$

$g(4) = 81$

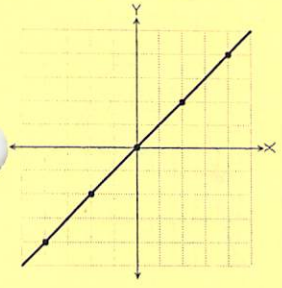
Evaluate $f(h) = |h| - 4$ for $f(-3)$

$f(-3) = |-3| - 4$

$f(-3) = -1$

The Four Basic Types of Functions

Linear

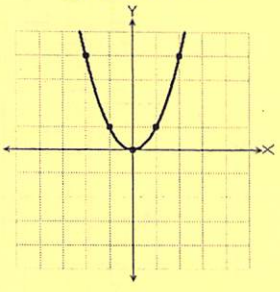


$f(x) = x$

D: All real #

R: All real #

Quadratic

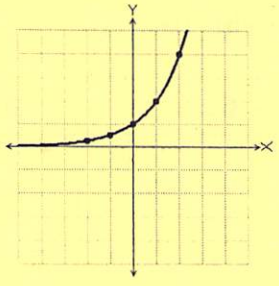


$f(x) = x^2$

D: All real #

R: $y \geq 0$

Exponential

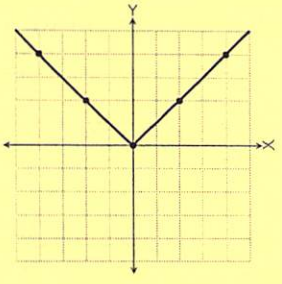


$f(x) = 2^x$

D: All real #

R: $y > 0$

Absolute Value



$f(x) = |x| - 1$

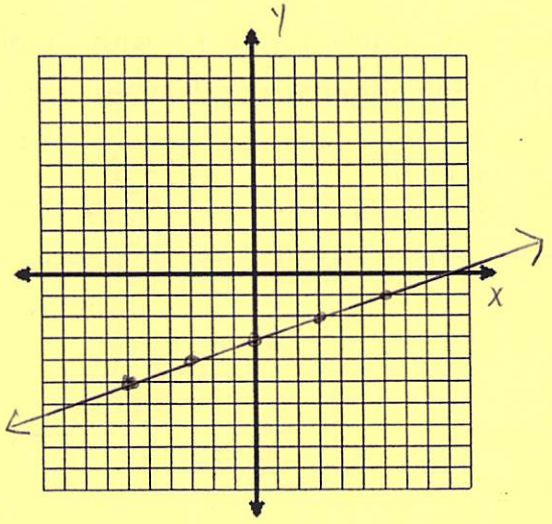
D: All real #

R: $y \geq 0$

Linear Functions

Model the function $y = \frac{1}{3}x - 3$ with a table of values and graph for the domain: $-6 \leq x \leq 6$

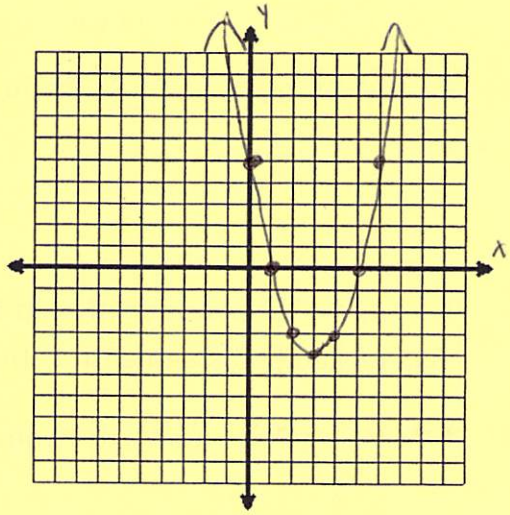
Domain (x)	$y = \frac{1}{3}x - 3$	Range (y)
-6	$y = \frac{1}{3}(-6) - 3$	-5
-3	$y = \frac{1}{3}(-3) - 3$	-4
0	$y = \frac{1}{3}(0) - 3$	-3
3	$y = \frac{1}{3}(3) - 3$	-2
6	$y = \frac{1}{3}(6) - 3$	-1



Quadratic Functions

Model the function $y = x^2 - 6x + 5$ with a table of values and graph for the domain: $0 \le x \le 6$.

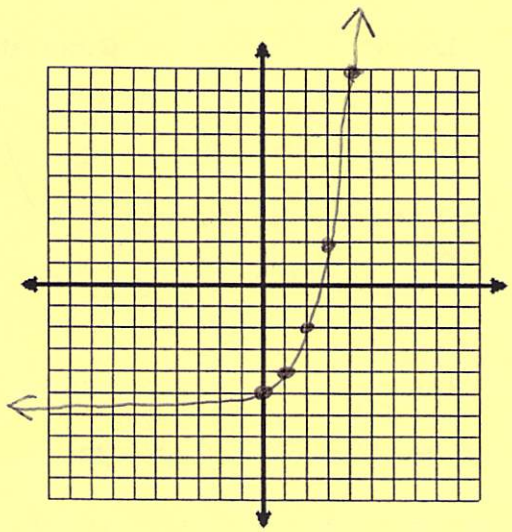
Domain (x)	$y = x^2 + 3x - 4$	Range (y)
0	$y = 0^2 + 6(0) + 5$	5
1	$y = 1^2 + 6(1) + 5$	0
2	$y = 2^2 - 6(2) + 5$	-3
3	$y = 3^2 - 6(3) + 5$	-4
4	$y = 4^2 - 6(4) + 5$	-3
5	$y = 5^2 - 6(5) + 5$	0
6	$y = 6^2 - 6(6) + 5$	5



Exponential Functions

Model the function $y = 2^x - 6$ with a table of values and graph for the domain: $0 \le x \le 4$.

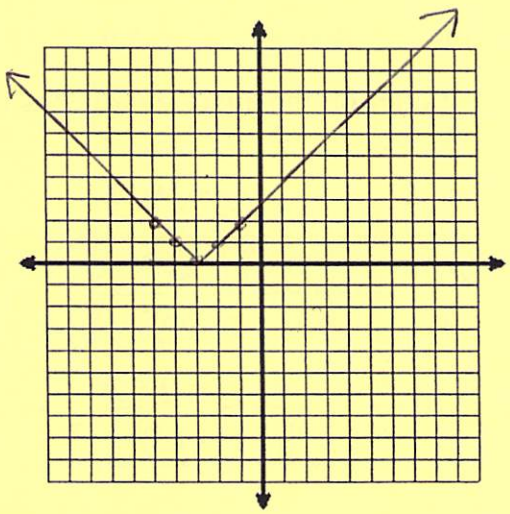
Domain (x)	$y = 2^x - 6$	Range (y)
0	$2^0 - 6$	-5
1	$2^1 - 6$	-4
2	$2^2 - 6$	-2
3	$2^3 - 6$	2
4	$2^4 - 6$	10



Absolute Value Functions

Model the function $y = |x + 3|$ with a table of values and graph for the domain: $-5 \le x \le -1$

Domain (x)	$y = \lvert x + 3 \rvert$	Range (y)
-5	$y = \lvert -5 + 3 \rvert$	2
-4	$y = \lvert -4 + 3 \rvert$	1
-3	$y = \lvert -3 + 3 \rvert$	0
-2	$y = \lvert -2 + 3 \rvert$	1
-1	$y = \lvert -1 + 3 \rvert$	2



Practice 5-3 Name _____

Use the functions $f(x)=2x$ and $g(x)=x^2+1$ to find the value of each expression.

1. $f(3)+g(4)$

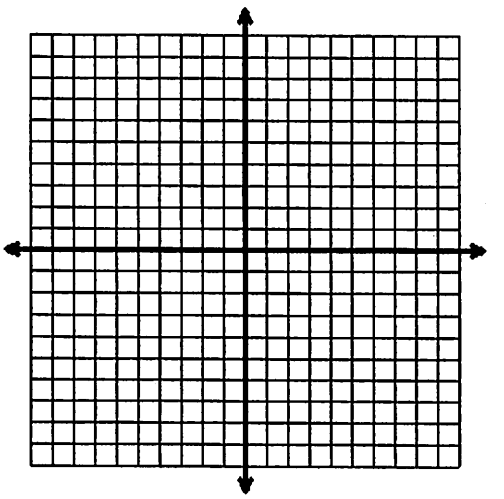
2. $g(3)+f(4)$

3. $f(5)+2g(1)$

4. $f(g(3))$

5. Model the function $y=x^2-6x+5$ with a table of values and graph for the domain: $0\le x\le 6$

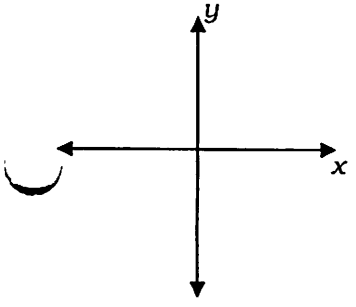
Domain (x)	$y=x^2-6x+5$	Range (y)



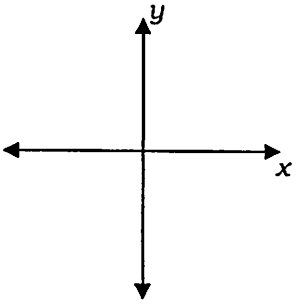
Write the set of range values for the given domain values _____

Draw a sketch of the graph for each of the following functions.

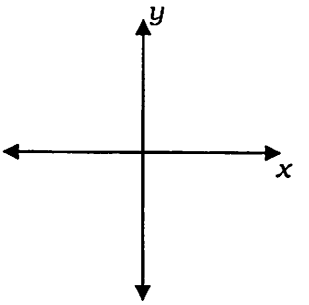
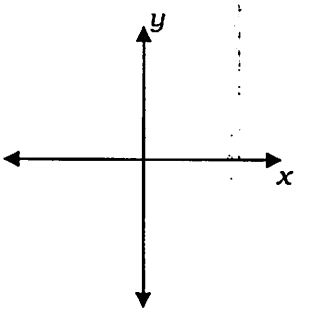
Linear



Quadratic



Exponential



Absolute Value