

Warm-up

Simplify:

1. $9^2 - 8$ $\neq 3$
2. $6(-12) + 30$ -42
3. Solve: $20 = 3x - 1$ $x = 7$
4. Graph: $y = 3x - 1$

4-7 Functions and Equations**Writing Equations:**

- x often represents the independent (control) variable.
- y often represents the dependent variable.

Example 1: Write an equation to represent each function:

a)

x	y
-3	3
-2	4
-1	5
0	6
1	7

b)

x	y
-3	-12
-2	-8
-1	-4
0	0
1	4
2	8

Solution:

Look for a pattern!

a) It looks like we add 6 to each x -value to get the y -values

Test this theory...pick x -values from your table and add 6 to them to see if they equal the corresponding y -value

$$-3 + 6 =$$

$$-2 + 6 =$$

$$1 + 6 =$$

So our pattern is $x + 6 = y$ b) It looks like we multiply the x -values by 4 to get the y -values

Test this theory...pick x -values from your table and multiply by 4 to see if they equal the corresponding y -value

$$-2 \times 4 =$$

$0 \times 4 =$

$1 \times 4 =$

So our pattern is $4x = y$

Example 2: Write an equation to represent this function:

The cost of daycare at the local YMCA depends on the number of children receiving care. The fee for the first child in a family is \$2.25 per hour and the fee for each additional child is \$1.50 per hour.

Solution: First, identify the dependent variable and independent variable.

Independent variable - each additional child (x)

Dependent variable - cost per hour (y)

Total cost per hour = cost of 1st child + cost of each additional child

So... $y = 2.25 + 1.50x$

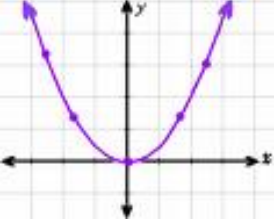
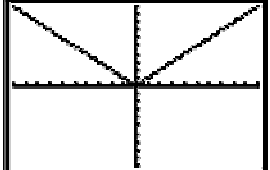
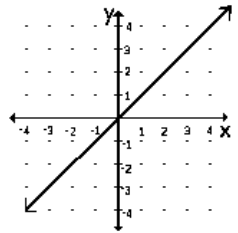
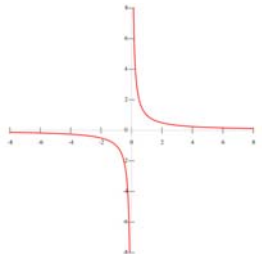
Example 3: Graph $y = |x|$

Solution: First, make a table!

x	y = x
-3	3
-2	2
-1	1
0	0
1	1
2	2
3	3

Then, plot the points on a coordinate plane....

Some Basic Functions:

Equations	$y = x^2$	$y = x $	$y = x$	$y = \frac{1}{x}$
Words	Squaring Function	Absolute value Function	Identity Function	Reciprocal Function
Graphs				

Example 4: State the function that represents each shape:

a) V-shape

b) Hyperbola

Solution:

a) absolute value function $y = |x|$

b) Reciprocal function $y = \frac{1}{x}$

Example 5: Make a conjecture about the graph of $y = 6x - 3$. Test your conjecture by graphing the function.

Solution:

Conjecture: $y = 6x - 3$ will form a line

Test this theory by making a table and graphing the points from $y = 6x - 3$

x	$y = 6x - 3$
-2	-15
-1	-9
0	-3
1	3
2	9

Now plot these points....

