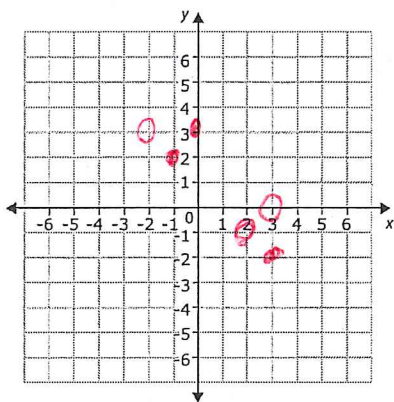


Review 2

Inverse Functions

1) Graph the following relation and its inverse. Use dots to show the normal relation and open circles to show the inverse's points.

x	y
-1	2
0	3
3	-2



inverse

$$\begin{array}{r|l} x & y \\ \hline 2 & -1 \\ 3 & 0 \\ -2 & 3 \end{array}$$

2) What is the inverse of the given relation?

a) $y = 3x + 2$

$$\begin{array}{r} x = 3y + 2 \\ -2 \quad -2 \\ \hline x - 2 = 3y \\ \frac{x-2}{3} = y \end{array}$$

$$\frac{x-2}{3} = y \rightarrow \frac{1}{3}x - \frac{2}{3} = y$$

b) $y = -3x - 1$

$$\begin{array}{r} x = -3y - 1 \\ +1 \quad +1 \\ \hline x + 1 = -3y \\ \frac{x+1}{-3} = y \end{array}$$

$$\frac{x+1}{-3} = y \rightarrow -\frac{1}{3}x + \frac{-1}{3} = y$$

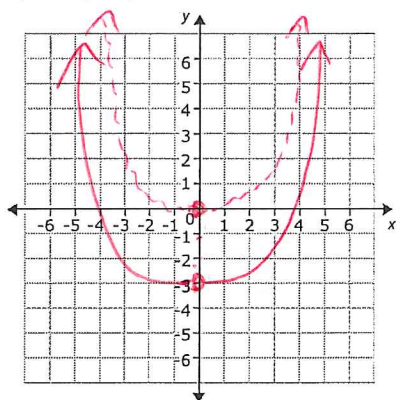
3) Evaluate the following for $f(x) = 4x - 2$. Remember these things are easy!

a) $f^{-1} \circ f(1) = 1$

b) $f^{-1} \circ f(-2) = -2$

Families of Functions

4) Graph $y = x^2 - 3$ and then translate it up 3 units.



Reflect over y-axis: switch x with -x

5) Let $g(x)$ be the reflection of $f(x) = x^2 + 3$ in the y-axis. What is the function rule for $g(x)$?

$(-x)^2 + 3 = x^2 + 3$

6) Let $g(x)$ be the reflection of $f(x) = x^2 - 7$ across the y-axis. What is the function rule for $g(x)$?

$(-x)^2 - 7 = x^2 - 7$

7) Write an equation for the following transformation of $y = x$:

a) a vertical stretch by a factor of 3

b) a vertical compression by a factor of $\frac{1}{4}$

$y = 3x$

Left/Right = ()

$y = \frac{1}{4}x$

8) For the function $f(x) = x^2$.

a) Let $g(x)$ be the graph of $f(x)$ shifted 3 units left and 4 units up. What is $g(x)$?

$(x + 3)^2 + 4$

b) Let $g(x)$ be the graph of $f(x)$ shifted 2 units right and 4 units down. What is $g(x)$?

$(x - 2)^2 - 4$

9) What are the translations (shifts) of the following graphs from the function $f(x) = x^2$?

a) $g(x) = (x - 1)^2 + 2$

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

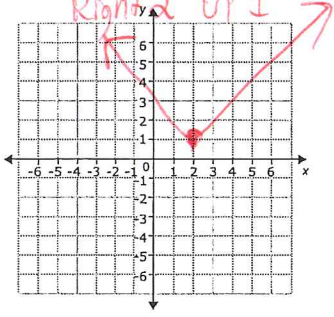
Right 1 UP 2

Left 1 Down 3

Absolute Value Functions

10) Graph the absolute value equations.

a) $y = |x - 2| + 1$



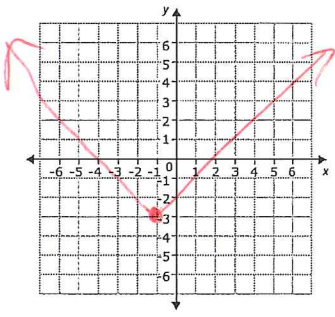
Y =

MATH

→

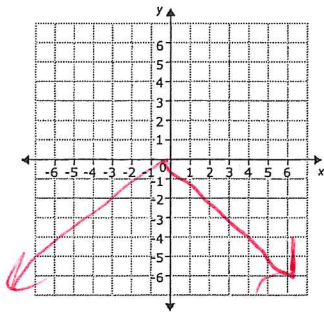
labs

b) $y = |x + 1| - 3$

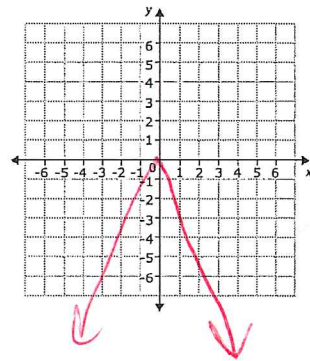


10) (continued) Graph the absolute value function equation.

c) $y = -(1/2)|x|$



d) $y = -3|x|$



Matrices

11) Suppose you have the following matrices. Find the following. If not possible, write not possible.

$$A = \begin{bmatrix} 1 & -1 \\ 2 & 4 \end{bmatrix}, \quad B = \begin{bmatrix} 3 & 4 & 2 \\ 1 & 6 & 7 \end{bmatrix}, \quad C = \begin{bmatrix} -1 & 5 & 4 \\ 2 & 7 & 4 \end{bmatrix}$$

a) $A + B$

$=$ Not possible

b) $B - C = \begin{bmatrix} 4 & -1 & -2 \\ -1 & -1 & 3 \end{bmatrix}$

c) $A \cdot B$ on calc $= \begin{bmatrix} 2 & -2 & -5 \\ 10 & 32 & 32 \end{bmatrix}$

12) Solve for the missing variables.

$$\begin{bmatrix} 9-x & 4 \\ 6 & 2t+5 \end{bmatrix} = \begin{bmatrix} 5 & 4 \\ 6 & -11 \end{bmatrix}$$

$$\begin{array}{r} 9-x = 5 \\ -9 \quad -9 \\ \hline -x = -4 \\ \boxed{x = 4} \end{array}$$

$$\begin{array}{r} 2t+5 = -11 \\ -5 \quad -5 \\ \hline 2t = -16 \\ \frac{2}{2} \quad \frac{-16}{2} \\ \hline \boxed{t = -8} \end{array}$$

