

PEMDAS

Sec II
Unit 4 Review

① solve
② switch

Part I: Matching. Match each equation on the left with its inverse listed on the right.

f 1) $y = 3x - 4$

c 2) $y = 4x - 3$

a 3) $y = (x - 3)^2$

e 4) $y = 4x^2 - 3$

d 5) $y = (x^2 + 4x) + 3$

a) $y = 3 \pm \sqrt{x}$

b) $y = -2 \pm \sqrt{x - 7}$

c) $y = \frac{1}{4}x + \frac{3}{4}$

~~d) $y = -2 \pm \sqrt{x + 1}$~~

~~e) $y = \pm \frac{1}{2}\sqrt{x + 3}$~~

~~f) $y = \frac{1}{3}x + \frac{4}{3}$~~

① $3x - 4 = y + 1$

$x = \frac{y}{3} + \frac{5}{3}$

$y = \frac{x}{3} + \frac{4}{3}$

② $4x^2 - 3 = y + 3$

$x = \pm \frac{\sqrt{y + 3}}{2}$

$y = \pm \frac{1}{2}\sqrt{x + 3}$

complete the square
 $(x^2 + 4x + 4) + 3 - 4$

$(x + 2)^2 - 1 = y + 1$

$x + 2 - 2 = \pm \sqrt{y + 1}$

$x = -2 \pm \sqrt{y + 1}$

$y = -2 \pm \sqrt{x + 1}$

Solve each equation for x.

6) $|4x - 6| = 10$

$4x - 6 = 10$	$4x - 6 = -10$
$\begin{array}{r} 4x - 6 \\ +6 \\ \hline 4x = 16 \end{array}$	$\begin{array}{r} 4x - 6 \\ +6 \\ \hline 4x = -4 \end{array}$
$x = 4$	$x = -1$

7) $|10 + v| = 20$

8) $|x^2 + 7x + 5| = 5$

$x^2 + 7x + 5 = 5$	$x^2 + 7x + 5 = -5$
$\begin{array}{r} x^2 + 7x + 5 \\ -5 \\ \hline x^2 + 7x = 0 \end{array}$	$\begin{array}{r} x^2 + 7x + 5 \\ +5 \\ \hline x^2 + 7x + 10 = 0 \end{array}$
$0 = x(x + 7)$	$0 = (x + 5)(x + 2)$
$x = 0, -7$	$x = -5, -2$

Simplify.

9) $-2\sqrt{18} - (3 + 2\sqrt{2})$

$-6\sqrt{2} - 3 - 2\sqrt{2}$

$-8\sqrt{2} - 3$

4x(3)

10) $4\sqrt{2}(3 - 6\sqrt{2})$

$12\sqrt{2} - 24(\sqrt{2})^2$

$12\sqrt{2} - 24(2)$

$12\sqrt{2} - 48$

11) $(4 + 4\sqrt{3})(1 + \sqrt{3})$

$4 + 4\sqrt{3} + 4\sqrt{3} + 4(\sqrt{3})^2$

$4 + 8\sqrt{3} + 4(3)$

$16 + 8\sqrt{3}$

Find the inverse of each function.

① Solve & switch

12) $f(x) = (x+3)^2$, $f^{-1}(x) = \underline{-3 \pm \sqrt{x}}$

$$\sqrt{(x+3)^2} = y - 3$$

$$x = -3 \pm \sqrt{y}$$

13) $g(x) = -2x - 2$, $g^{-1}(x) = \underline{\hspace{2cm}}$

$$\frac{-2x - 2}{-2} = \frac{y + 2}{-2}$$

$$x = \frac{y + 2}{-2}$$

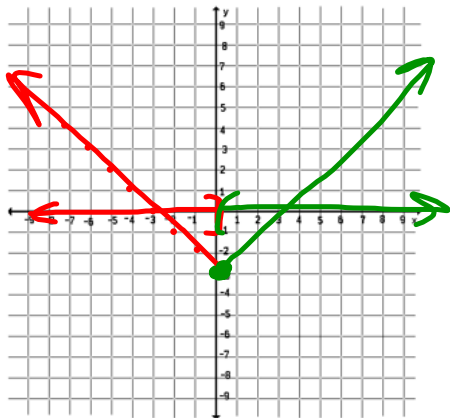
$$y = \frac{x}{-2} + \frac{2}{-2}$$

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

Part III: Graphing

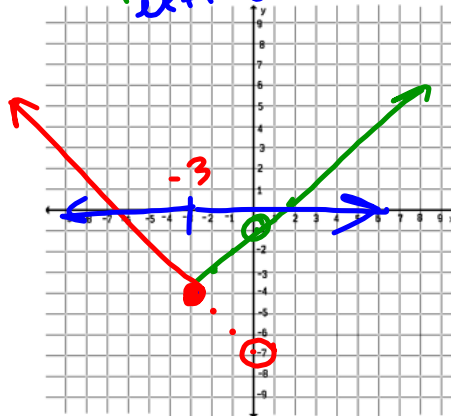
Graph each equation. Then write a piece-wise function for each graph.

14) $y = |x| - 3$ *down*

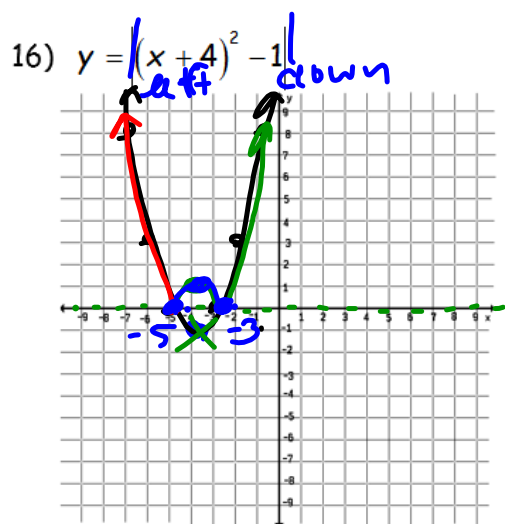


$$f(x) = \begin{cases} -x - 3, & x < 0 \\ x - 3, & x \geq 0 \end{cases}$$

15) $y = |x + 3| - 4$ *left down*



$$f(x) = \begin{cases} -(x+3) - 4 & \rightarrow -x - 7 & x \leq -3 \\ (x+3) - 4 & \rightarrow x - 1 & x > -3 \end{cases}$$

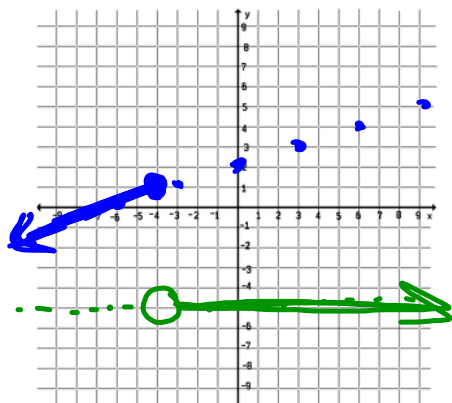


$$f(x) = \begin{cases} (x+4)^2 - 1 & , x < -5 \\ -(x+4)^2 - 1 \rightarrow -(x+4)^2 + 1 & , -5 \leq x \leq 3 \\ (x+4)^2 - 1 & , x > -3 \end{cases}$$

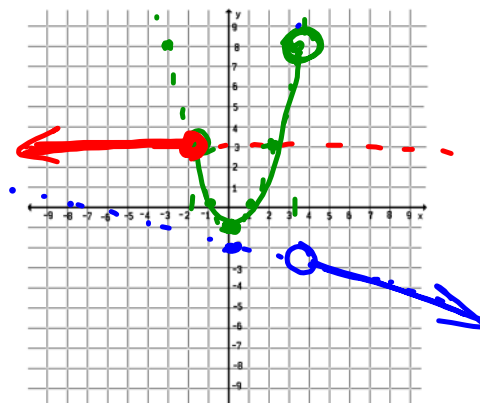
Graph each piece-wise function.

$$17) f(x) = \begin{cases} \frac{1}{3}x + 2, & x \leq -4 \\ -4, & x > -4 \end{cases}$$

$y = -4$



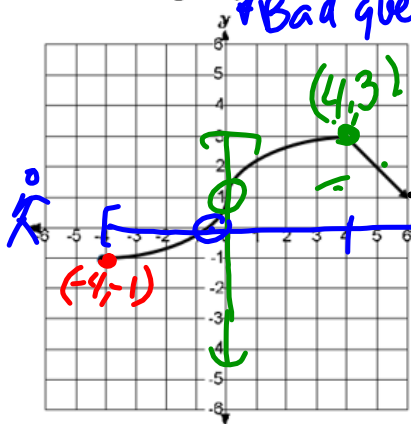
$$18) f(x) = \begin{cases} 3, & x \leq -2 \\ x^2 - 1, & -2 < x < 3 \\ -2 - \frac{1}{4}x, & x > 3 \end{cases}$$



Part IV: Short Answer

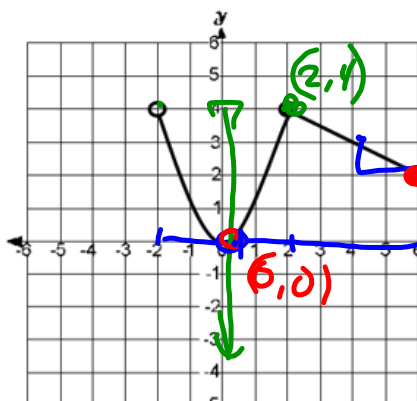
Find the following key features for each function.

19)



- a) Domain: $[-4, \infty)$
- b) Range: $[-\infty, 3]$
- c) x-int: -1 and 7
- d) y-int: $@ y = 1$
- e) min/max: $@ (-4, -1)$ min $@ (4, 3)$ max
- f) increasing: $(-4, 4)$
- g) decreasing: $(4, \infty)$
- h) constant: $-$

20)

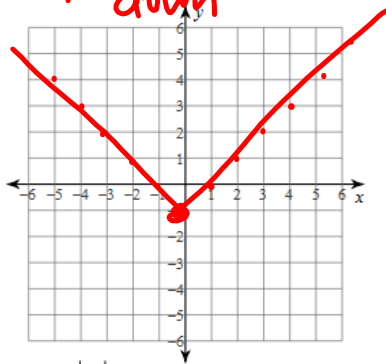


- a) Domain: $(-2, \infty)$
- b) Range: $[-\infty, 4]$
- c) x-int: $@ 0$ and 6
- d) y-int: $y = 0$
- e) min/max: $min @ (0, 0)$ $max @ (2, 4)$
- f) increasing: $(0, 2)$
- g) decreasing: $(-2, 0)$ and $(2, \infty)$
- h) constant: $-$

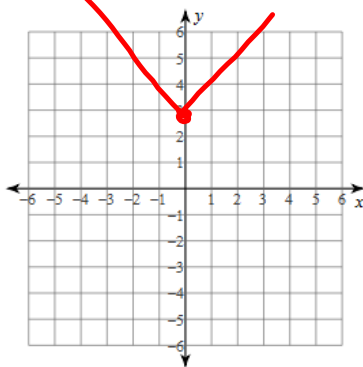
CH 4 Graphing Absolute Value Review

Graph each equation.

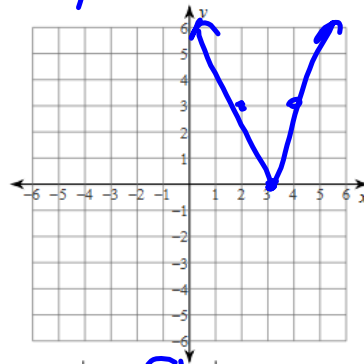
1) $y = \frac{4}{7}|x| - 1$
down



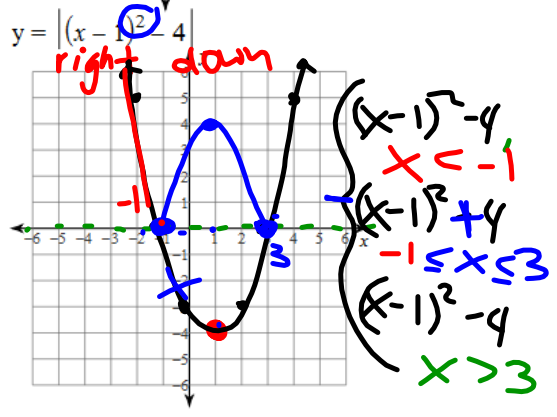
3) $y = |x| + 3$



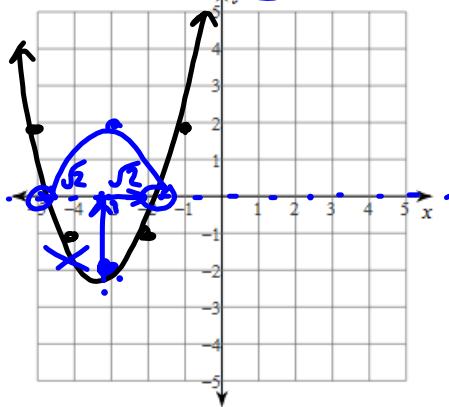
2) $y = \frac{3}{7}|x - 3|$
slope right



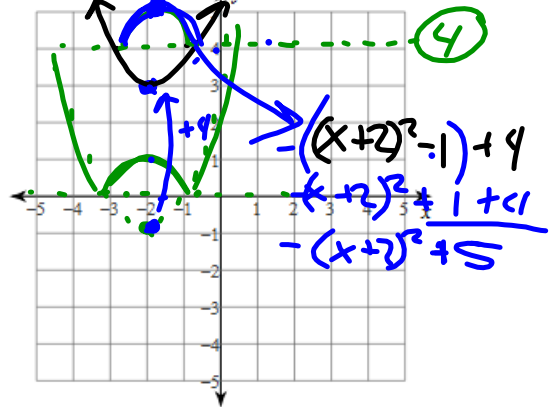
4) $y = |(x - 1)^2 - 4|$



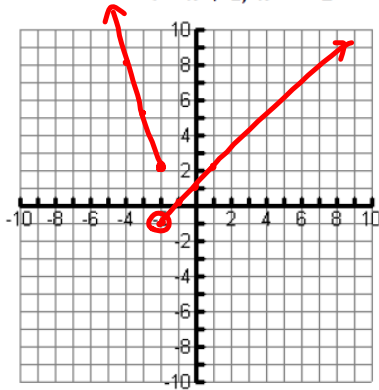
5) $y = |(x+3)^2 - 2|$



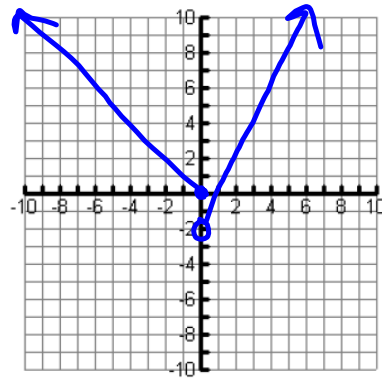
6) $y = |(x+2)^2 - 1| - 4$



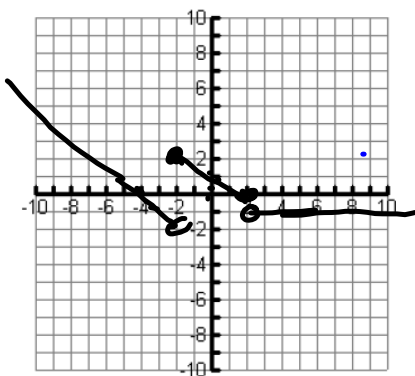
7. $f(x) = \begin{cases} -3x - 4, & x \leq -2 \\ x + 1, & x > -2 \end{cases}$



8. $f(x) = \begin{cases} -x, & x \leq 0 \\ 2x - 2, & x > 0 \end{cases}$

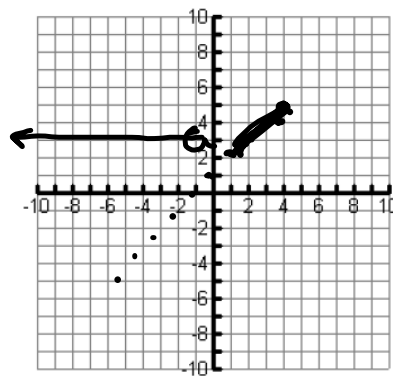


9. $f(x) = \begin{cases} -x - 4, & x < -2 \\ -\frac{1}{2}x, & -2 \leq x \leq 2 \\ -1, & x > 2 \end{cases}$



Controle

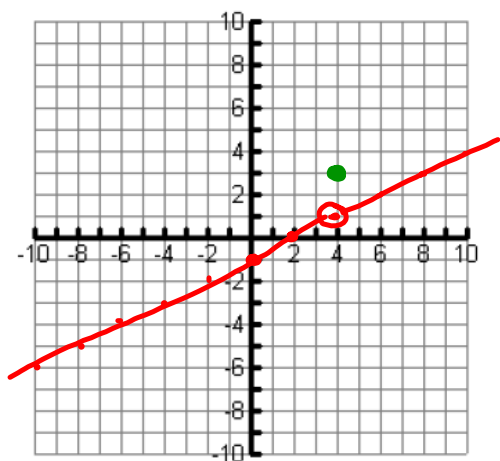
10. $f(x) = \begin{cases} 3, & x < -1 \\ x + 1, & 1 \leq x \leq 4 \end{cases}$



Controle

LA

$$11. f(x) = \begin{cases} \frac{1}{2}x - 1, & x \neq 4 \\ 3, & x = 4 \end{cases}$$



$$12. f(x) = \begin{cases} x + 4, & -6 \leq x < 2 \\ -6, & x = 2 \\ -x + 2, & x > 2 \end{cases}$$

