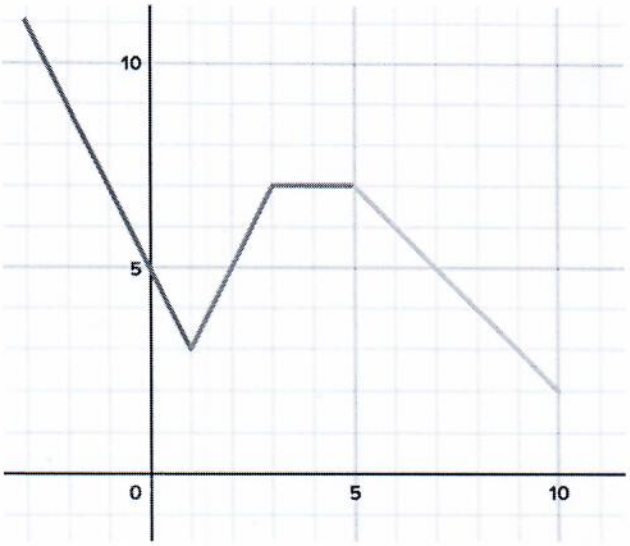
Math 3 Unit 1 Review Sheet

Name: Key



Find the PW equation for the graph above.

Use the graph to the left to answer the following questions:

Domain	$[-3, 10]$
Range	$[2, 11]$
Maximum	$y = 11$
Minimum	$y = 2$
Increase	$[1, 3]$
~~Increase~~ Decreas	$[-3, 1)$
Decrease	$[5, 10]$
Constant	$(3, 5)$
x-int(s)	none
y-int	$y = 5$
Continuous?	yes
$f(5) =$	7
Find x if $f(x+4) = 2$	$x = 6$

Solve for the unknown variable.

a. $|4x + 3| = 19$

$4x + 3 = 19$ $\quad 4x + 3 = -19$

$4x = 16$ $\quad 4x = -22$

$x = 4$ $\quad x = -22/4 = -11/2$

b. $-3|x + 3| - 2 = -5$

$|x+3| = 1$

$x + 3 = 1$ $\quad x = -2$

$x + 3 = -1$ $\quad x = -4$

c. $|x + 12| > 3$

$x + 12 > 3$ $\quad x > -9$

$x + 12 < -3$ $\quad x < -15$

d. $-2|x + 1| - 1 < -11$

$-2|x+1| < -10$

$|x+1| > 5$

$x + 1 > 5$ $\quad x + 1 < -5$

$x > 4$ or $x < -6$

Write the equation of the absolute value function given the PW function's equation.

e. $\begin{cases} (x+3) - 1, & x > -3 \\ -(x+3) + 1, & \leq -3 \end{cases}$

$y = |x + 3| - 1$

f. $\begin{cases} -(x+9) - 3, & x > -9 \\ (x+9) + 3, & x \leq -9 \end{cases}$

$y = -|x + 9| - 3$

g. $\begin{cases} 2x - 7, & x > 5 \\ -2x + 13, & x \leq 5 \end{cases}$

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

h. $\begin{cases} (x+6)^2 + 7, & x > -6 \\ -(x+6)^2 - 7, & x \leq -6 \end{cases}$

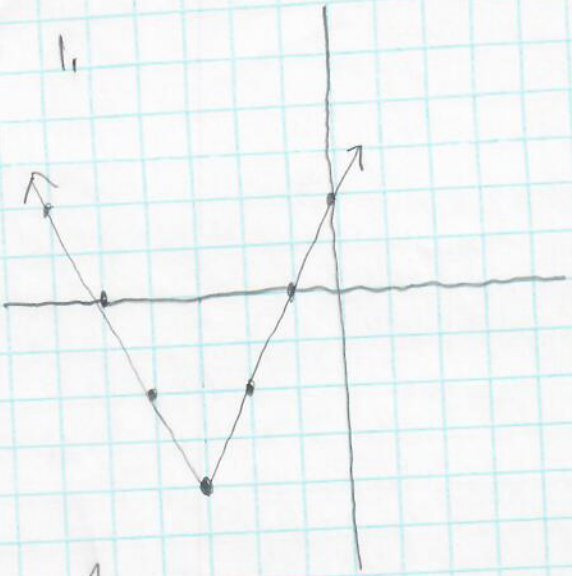
$y = |(x+6)^2| + 7$

i. $\begin{cases} (x-4)^2 + 1, & x > 4 \\ -(x-4)^2 - 5, & x \leq 4 \end{cases}$

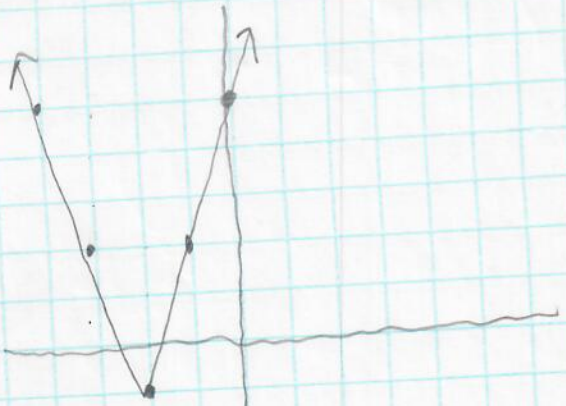
$y = |(x-4)^2 - 2| + 3$

Make sure you would be able to graph a - i

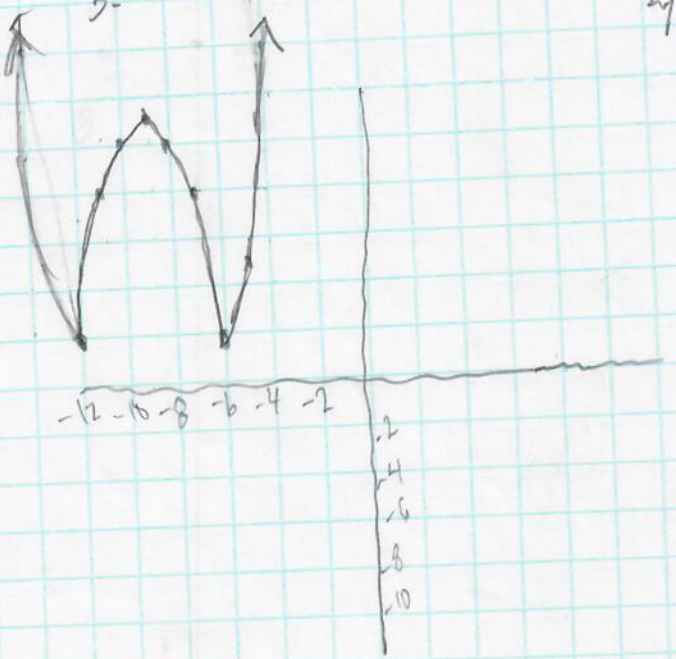
1.



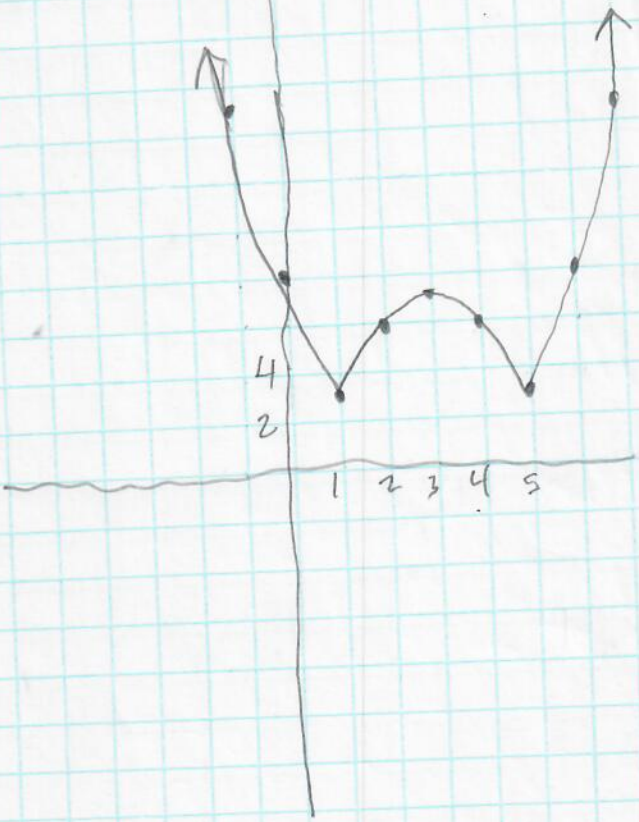
2.



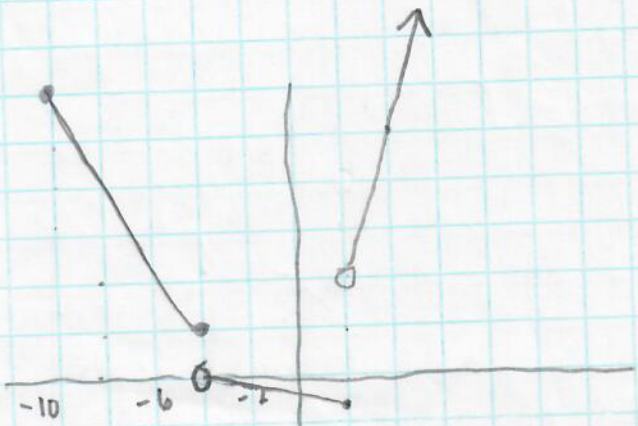
3.



4.



14.



Domain: $[-10, \infty)$

Range $[-1, 0) \cup [2, \infty)$

5. D: $(-\infty, \infty)$
R: $[-4, \infty)$

6.
Domain: $(-\infty, \infty)$
Range: $[-1, \infty)$

7. Domain $(-\infty, \infty)$
Range: $[2, \infty)$

8. Domain $(-\infty, \infty)$
Range: $[3, \infty)$

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

or

$\begin{cases} -2x-10, & x \leq -3 \\ 2x+2, & x > -3 \end{cases}$

10. $g(x) = 3|(x+2)|-1$

11. $\begin{cases} (x-1)^2-9, & (-\infty, -2] \cup [4, \infty) \\ -(x-1)^2+9, & (-2, 4) \end{cases}$

12. $|(x-3)^2+-4|+3$

13. $\begin{cases} -3(x+2)-3, & x \leq -2 \\ 3(x+2)-3, & x > 2 \end{cases}$

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