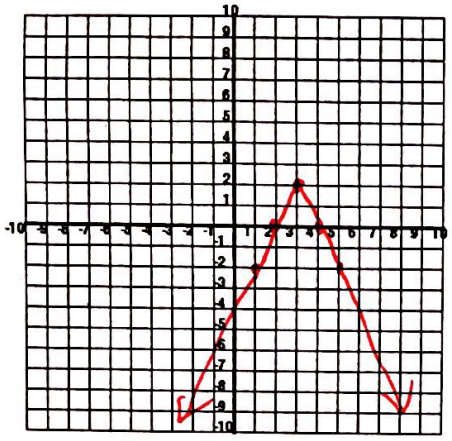
Math 3 **Unit 1 Study Guide 2019** **Name:** Key

Graph each function

1. $y = -2|x-3|+2$ Vertex: $(3, 2)$

Domain: $(-\infty, \infty)$ Range: $(-\infty, 2]$



2. $y = -|x-3|+2$ Vertex: $(3, 2)$

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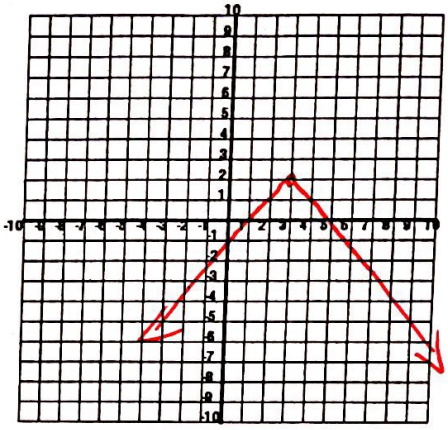
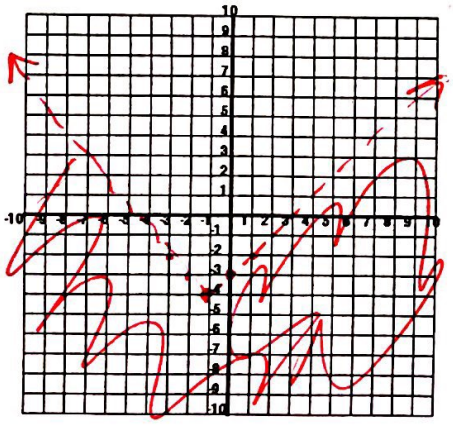
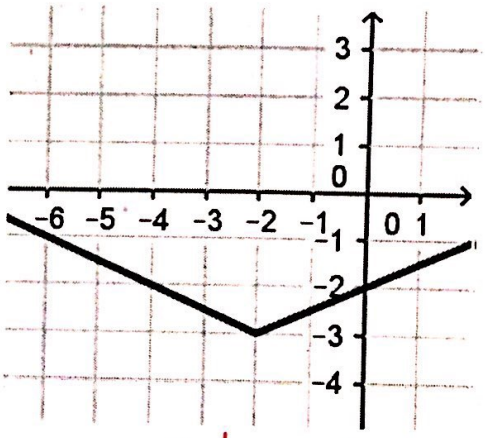


3. $y < |x+1| - 4$



4. Given the graph, write the equation:



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

Evaluate the following piecewise functions for the given domain.

5. $f(x) = \begin{cases} x^2 - 1 & x \le 0 \\ 2x - 1 & 0 < x \le 5 \\ 3 & x > 5 \end{cases}$

a) $f(-2) =$ 3 *b)* $f(0) =$ -1 *c)* $f(5) =$ 9

d) $2f(3) - f(6) =$ 7

$2(5) - 3$

6. $f(x) = \begin{cases} 5 & x \le -3 \\ -2x - 3 & x > -3 \end{cases}$

a) $f(-4) =$ 5 *b)* $f(0) =$ -3 *c)* $f(3) =$ -9

$-2(3)-3$

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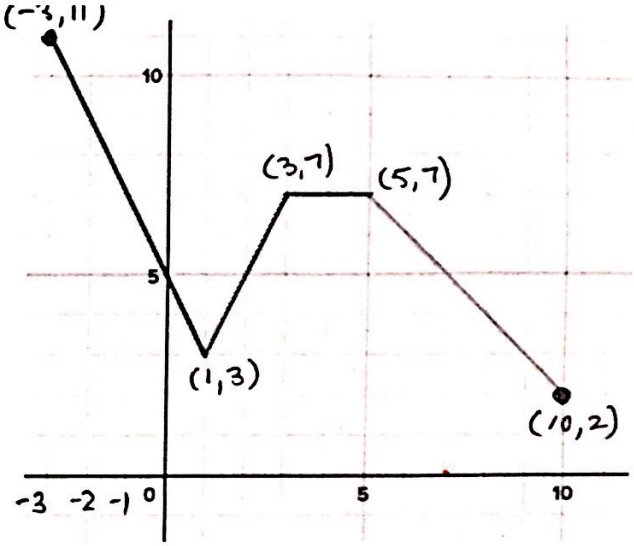
7. Write the equation of the piecewise function given:



$$f(x) = \begin{cases} \textit{function here} & , & \textit{domain here} \\ -2(x+3)+11 & , & [-3,1] \\ 2(x-1)+3 & , & (1,3] \\ 7 & , & (3,5] \\ -1(x-5)+7 & & (5,10] \end{cases}$$

8) Use the graph to find:

a) $f(1) =$ 3, b) $f(10) =$ 2,

c) $f(x) = 5, x =$ 0 and 2 and 7

Solve each problem. SHOW your work and CIRCLE the final answer. Write the inequalities in interval notation and show the solution on a number line.

9. $|2x-1| = 5$

$2x-1=5$ $2x-1=-5$

$2x=6$ $2x=-4$

$x=3$ $x=-2$

10. $2|x+4|-6=10$

$|x+4|=8$

$x+4=8$ $x+4=-8$

$x=4$ $x=-12$

11. $|3x+1|+10=4$

$|3x+1|=-6$

No solution

12. $|3x-7| = 5x-4$

GRAPH !! OR...

$3x-7=5x-4$ $3x-7=-5x$

$-3=2x$ $8x=11$

~~$x=-2/3$~~ $x=11/8$

Doesn't work OR

$x=1.375$

13. $2+|x+5|>8$

$|x+5|>6$

$x+5>6$ $x+5<-6$

$x>1$ $x<-11$

$(-\infty,-11)\cup(1,\infty)$

14. $-4|3x+2| \geq -16$

$|3x+2| \leq 4$

$3x+2 \leq 4$ $3x+2 \geq -4$

$3x \leq 2$ $3x \geq -6$

$x \leq \frac{2}{3}$ $x \geq -2$

$[-2, 2/3]$

-2 2/3

15. $|2x+1|-3<6$

$|2x+1|<9$

$2x+1<9$ $2x+1$

16. $|x+8| < -6$

No solution

Can't be less than neg.

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