

Name: Key!

Honors Algebra 2

Unit 4b (Part 2) Test Review

Solve the following equation or inequality. Write answers in interval notation for the inequalities.

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

$$\begin{aligned} 1 - x &= 2x & 1 - x &= -2x \\ 3x &= 1 & -x &= 1 \\ \boxed{x = 1/3} & & \cancel{x = -1} & \end{aligned}$$

5. $3|5x - 5| + 1 \geq 10$

$$\begin{aligned} 3|5x - 5| &\geq 9 && \text{Greater} \\ |5x - 5| &\geq 3 \\ 5x - 5 &\geq 3 & 5x - 5 &\leq -3 \\ 5x &\geq 8 & 5x &\leq 2 \\ x &\geq 8/5 & x &\leq 2/5 \end{aligned}$$



$(-\infty, 2/5] \cup [8/5, \infty)$

2. $2|-2x + 5| + 3 = 17$

$$\begin{aligned} 2|-2x + 5| &= 14 \\ |-2x + 5| &= 7 \\ -2x + 5 &= 7 & -2x + 5 &= -7 \\ -2x &= 2 & -2x &= -12 \\ \boxed{x = -1} & & \boxed{x = 6} & \end{aligned}$$

6. $3 + 2|x - 3| = 7$

$$\begin{aligned} 2|x - 3| &= 4 \\ |x - 3| &= 2 \\ x - 3 &= 2 & x - 3 &= -2 \\ \boxed{x = 5} & & \boxed{x = 1} & \end{aligned}$$

3. $\frac{-2}{-2}|x + 3| \geq \frac{-12}{-2}$

less than AND

$$\begin{aligned} |x + 3| &\leq 6 \\ x + 3 &\leq 6 & x + 3 &\geq -6 \\ \boxed{x \leq 3} & & \boxed{x \geq -9} & \end{aligned}$$

A number line with arrows at both ends. There are two solid dots on the line. The first dot is labeled -9 and the second dot is labeled 3 . The region between -9 and 3 is shaded with a double-headed arrow.

$-9 \leq x \leq 3$

7. $2|3x - 1| + 8 < 4$

$$\begin{aligned} 2|3x - 1| &< -4 \\ |3x - 1| &< -2 \\ \text{not possible} \\ \text{No solution} \end{aligned}$$

4. $|2x + 2| = 8$

$$\begin{aligned} 2x + 2 &= 8 & 2x + 2 &= -8 \\ 2x &= 6 & 2x &= -10 \\ \boxed{x = 3} & & \boxed{x = -5} & \end{aligned}$$

8. $|2 - 3x| - 5x > 4$

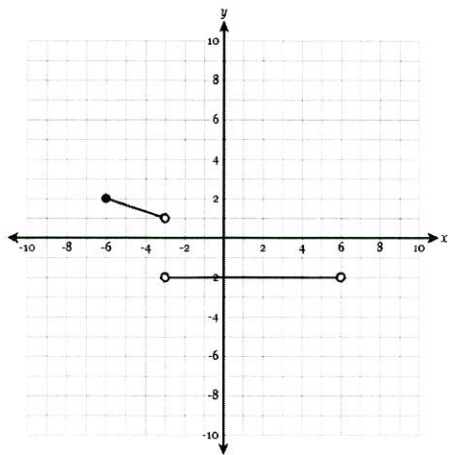
$$\begin{aligned} |2 - 3x| &> 4 + 5x \\ 2 - 3x &> 4 + 5x & 2 - 3x &< -4 - 5x \\ 2 &> 4 + 8x & 6 - 3x &< -5x \\ -2 &> 8x & 6 &< -2x \\ -3 &> x & -3 &> x \\ \boxed{x < -1/4} & & \boxed{x < -3} & \end{aligned}$$

A number line with arrows at both ends. There are two open circles on the line. The first circle is labeled -3 and the second circle is labeled $-1/4$. The region between -3 and $-1/4$ is shaded with a double-headed arrow.

$(-\infty, -1/4)$

Express the function graphed on the axes below as a piecewise function. State the Domain and Range.

9.



$$f(x) = \begin{cases} -\frac{1}{3}x & -6 \leq x < -3 \\ -2 & -3 < x < 6 \end{cases}$$

Domain: $[-6, -3) \cup (-3, 6)$

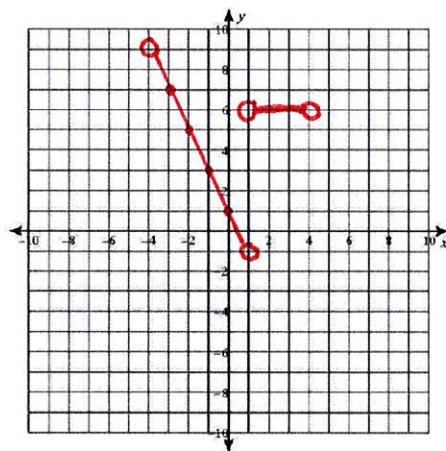
Range: $\{-2\} \cup (1, 2]$

Graph the following function on the axes provided.

11.

$$f(x) = \begin{cases} -2x + 1 & \text{for } -4 < x < 1 \\ 6 & \text{for } 1 < x < 4 \end{cases}$$

x	y
-4	9
1	-1

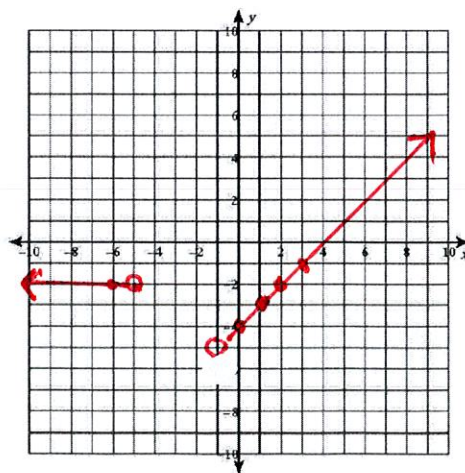


12.

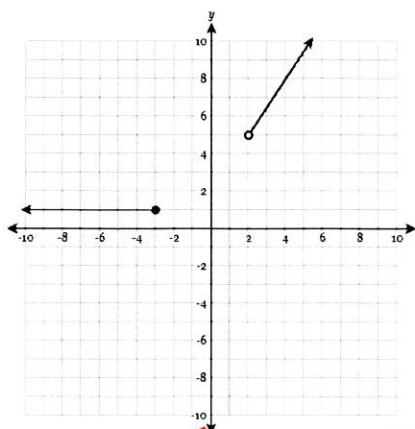
$$f(x) = \begin{cases} -2 & \text{for } x < -5 \\ x - 4 & \text{for } x > -1 \end{cases}$$

x	y
-5	-2
-6	-2

x	y
-1	-5
0	-4
1	-3



10.



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

Domain: $(-\infty, -3] \cup (2, \infty)$

Range: $\{1\} \cup (5, \infty)$