Bellwork Hon Alg2 Friday, January 20, 2017

Solve for the variable indicated. State restrictions on the the variables.

1. $Q(M - Y) + K = RM$ Solve for M

2. $\dfrac{CH - A}{W} + E = G$ Solve for H

3. Solve. $6(R - 5) + 40 \geq 4R - 9 + 2R - 1$

State the solution to each compound inequality. Give your answer as a single statement, if possible.

4. $4 - 3x < -32 \quad OR \quad x \geq 10$

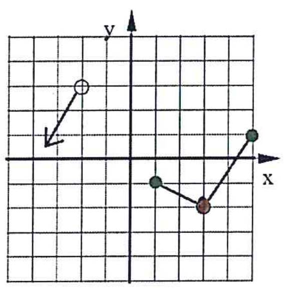
5. $y < 3 \quad AND \quad y > 6$

6. $m \geq -1 \quad AND \quad m < 5$

7. $H \leq 2 \quad AND \quad H \leq 5$

8. $c \geq 4 \quad OR \quad c < 8$

9. State the Domain and Range of the relation shown in the graph:



Solve each.

10. $|2x - 7| \leq 11$

11. $|x + 5| = -2x + 1$

Use these functions for the 12-15:

$f(x) = x - 3$ $\quad g(x) = 2x + 3$ $\quad h(x) = \dfrac{2x + 1}{x - 3}$ $\quad k(x) = x^2 - 2x$

12. Find $g(h(10))$

13. Find $f(k(-5))$

14. Find $k(f(x))$. Simplify as much as possible.

15. Find $h(g(x))$. Simplify as much as possible.

HON ALG 2 Bellwork 1-20-17

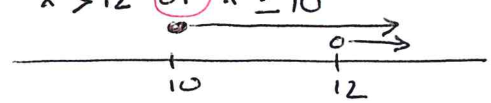
ANSWERS

(1)
$$Q(M-Y)+K=RM$$
$$QM-QY+K=RM$$
$$-QY+K=RM-QM$$
$$-QY+K=M(R-Q)$$
$$\boxed{\frac{-QY+K}{R-Q}=M}$$
$$\boxed{R-Q\neq 0}$$

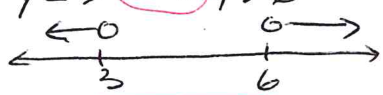
(2)
$$\frac{CH-A}{w}+E=G$$
$$\frac{CH-A}{w}=G-E$$
$$CH-A=w(G-E)$$
$$CH=w(G-E)+A$$
$$\boxed{H=\frac{w(G-E)+A}{C}}$$
$$\boxed{W\neq 0 \quad C\neq 0}$$

(3)
$$6(R-5)+40\geq 4R-9+2R-1$$
$$6R-30+40\geq 4R-9+2R-1$$
$$6R+10\geq 6R-10$$
$$10\geq -10$$
$\boxed{\text{ALL Real \#'s}}$

(4)
$$4-3x<-32$$
$$-4 \qquad -4$$
$$\frac{-3x}{-3}<\frac{-36}{-3}$$
$$\boxed{x\geq 10}$$
$x>12$ or $x\geq 10$

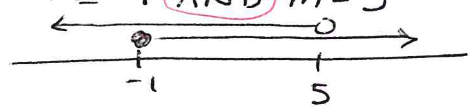


(5) $y<3$ AND $y>6$



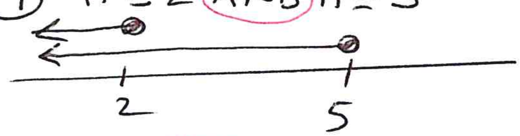
$\boxed{\text{NO SOL}}$

(6) $m\geq -1$ AND $m<5$



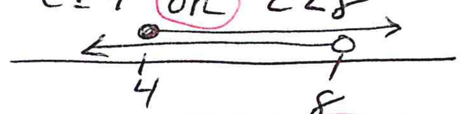
$\boxed{-1\leq m<5}$

(7) $H\leq 2$ AND $H\leq 5$



$\boxed{H\leq 2}$

(8) $C\geq 4$ or $C<8$



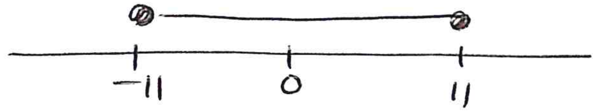
$\boxed{\text{ALL REAL \#'s}}$

(9) Domain: $x<-2$, $1\leq x\leq 5$

Range: $y<3$

(10) $|2x-7| \le 11$

DISTANCE FROM zero IS less than (closer than) 11 units



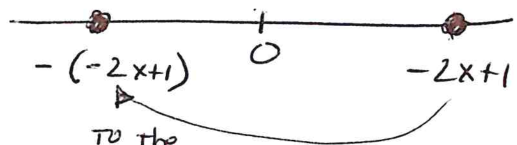
$$-11 \le 2x-7 \le 11$$
$$+7 \quad\quad +7 \quad +7$$

$$\frac{-4}{2} \le \frac{2x}{2} \le \frac{18}{2}$$

$$\boxed{-2 \le x \le 9}$$

(11) $|x+5| = -2x+1$

DISTANCE FROM zero is EXACTY $-2x+1$ units, on either side of zero



TO the left of zero is the opposite # as the right side of zero.

$$x+5 = -(-2x+1)$$
$$x+5 = 2x-1$$
$$5 = x-1$$
$$6 = x$$

check:

$$|6+5| = -2(6)+1$$
$$|11| = -12+1$$
$$|11| = -11 \quad X$$

extraneous solution

$$x+5 = -2x+1$$
$$x+5 = -2x+1$$
$$3x+5 = 1$$
$$3x = -4$$
$$x = -4/3$$

$$|-4/3+5| = -2(-4/3)+1$$
$$|-4/3 + 15/3| = 8/3+1$$
$$|11/3| = 8/3+3/3$$
$$|11/3| = 11/3 \checkmark$$

$$\boxed{x = -4/3}$$

$f(x) = x-3$ $g(x) = 2x+3$ $h(x) = \frac{2x+1}{x-3}$ $k(x) = x^2 - 2x$

(12) $g(h(10))$

1st: $h(10) = \frac{2(10)+1}{10-3} = \frac{20+1}{7} = \frac{21}{7} = 3$

2nd: $g(h(10)) = g(3) = 2(3)+3 = 6+3 = 9$

$\boxed{g(h(10)) = 9}$

(13) $f(k(-5))$

1st: $k(-5) = (-5)^2 - 2(-5) = 25+10 = 35$

2nd: $f(k(-5)) = f(35) = 35-3 = 32$

$\boxed{f(k(-5)) = 32}$

(14) $k(f(x)) = (x-3)^2 - 2(x-3) = x^2 - 6x + 9 - 2x + 6$

substitute $f(x)$ into the function $k(x)$

$= \boxed{x^2 - 8x + 15}$

(15) $h(g(x)) = \frac{2(2x+3)+1}{(2x+3)-3} = \frac{4x+6+1}{2x+3-3} = \boxed{\frac{4x+7}{2x}}$

substitute $g(x)$ into the function $h(x)$

can't simplify this.