Honors Algebra 2 Review Test #1 Fall 2013

Sections: 1-4, 1-5, 3-2 to 3-4, 3-6, 4-7, and 7-6

Solve each equation.

1. $3(m-4)-8m = 7-5m-15$

2. $9+8k-3+6k = 7(2k+3)-15$

Solve each inequality.

3. $9-3y+6+y < 21$

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

Sate the solution to each compound inequality. Give your answer in the simplest form possible.

5. $x > 12$ *OR* $x \geq 10$

6. $y < 3$ *AND* $y > 6$

7. $m \geq -1$ *AND* $m < 5$

8. $H \leq 2$ *AND* $H \leq 5$

9. $c \geq 4$ *OR* $c < 8$

10. $M < 0$ *OR* $M \geq 2$

Solve each.

11. $|4x-5|+1 = 19$

12. $|x+7| > 20$

13. $|2x-7| \leq 11$

14. Solve each system of equations using substitution.

a) $y = 2x-9$
$y = 4x+13$

b) $y = 3x-1$
$2x+5y = -22$

15. Solve each system of equations using elimination.

a) $3x+4y = 30$
$7x+2y = 26$

b) $2x-6y = 20$
$5x+4y = -7$

16. Solve this system of equations by using matrices on the graphing calculator. For the test you will be asked to write the coefficient and constant matrices then state the solution as an ordered pair.

a.
$4.25x+6y = 38$
$-8x+7.5y = 154$

b.
$4a+b-2c = -30$
$a+8c = 43$
$7b-c = 8$

17. Graph the system of inequalities. Shade the solution region with a colored pencil.

$y < -2x+4$ $4x-6y \leq 12$

18. Use these functions: $m(b) = 2b-5$ $n(b) = 3b+4$ $p(b) = \dfrac{9b-3}{b+5}$

a) Find $p(m(2))$

b) Find $p(n(b))$ simplify if possible.

19. A company makes and sells two kinds of containers: Steel and Aluminum.
>Materials costs are $12 for each steel container and $20 for each aluminum container
>The weekly budget for materials is at most $3600
>Due to the size of their plant they are limited to making up to 240 containers a week

a) Write a system of inequalities that models these constraints
b) Graph this system of inequalities to find the feasible region.
c) If steel containers can be sold for $250 each and Aluminum containers can be sold for $300 each find the number of each type of container that should be made each week in order to maximize the company's income.

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

a. $Q(M-Y)+K = R$ Solve for M

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

c. $KP+MP = A$ Solve for P

Honors Algebra 2 Review Test #1 ANSWERS Fall 2013

Sections: 1-4, 1-5, 3-2 to 3-4, 3-6, 4-7, and 7-6

1. No solution 2. All real numbers 3. $y > -3$ 4. All real numbers

5. $x \geq 10$ 6. No Solution 7. $-1 \leq m < 5$ 8. $H \leq 2$ 9. All real numbers

10. $M < 0$ *OR* $M \geq 2$

11. $x = -\frac{13}{4}, \frac{23}{4}$ 12. $x < -27$ *or* $x > 13$ 13. $-2 \leq x \leq 9$

14. a) $(-11,-31)$ b. $(-1,-4)$ 15. a. $(2,6)$ b. $(1,-3)$

16. a.

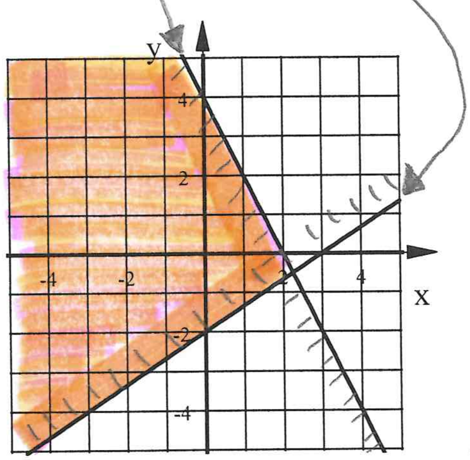
$A\begin{bmatrix} 4.25 & 6 \\ -8 & 7.5 \end{bmatrix}$ $B\begin{bmatrix} 38 \\ 154 \end{bmatrix}$ $Sol: (-8,12)$

b.

$A\begin{bmatrix} 4 & 1 & -2 \\ 1 & 0 & 8 \\ 0 & 7 & -1 \end{bmatrix}$ $B\begin{bmatrix} -30 \\ 43 \\ 8 \end{bmatrix}$ $Sol: (-5,2,6)$

17. Graph the system of inequalities. Shade the solution region with a colored pencil.

$y < -2x + 4$ $4x - 6y \leq 12$



18. a) $p(m(2)) = -3$ b) $p(n(b)) = \frac{27b+33}{3b+9} = \frac{9b+11}{b+3}$

19. S =# of steel containers A = # aluminum containers

a) $S \geq 0,\ A \geq 0,\ 20A + 12S \leq 3600,\ A + S \leq 240$

b) Corner points of feasible region: $(A,S) : (0,0), (0,240), (180,0), (90,150)$

c) $Income = 300A + 250S$ Max income when the company makes: 90 Aluminum containers and 150 Steel containers.

20. a. $M = \frac{R-K}{Q} + Y$ or $\frac{R-K+QY}{Q}$ $Q \neq 0$

b. $H = \frac{W(G-E)+A}{C}$ $C, W \neq 0$ c. $P = \frac{A}{K+M}$ $K + M \neq 0$