Algebra 2 Review Chapter 3 Test Fall 2014

1. Solve each system of equations using substitution.

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

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

2. Solve each system of equations using elimination.

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

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

3. 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. $4a + b - 2c = -30$
$a + 8c = 43$
$7b - c = 8$

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

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

5. 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.

6. Without actually solving the system of equations state the number of solutions: One, None, or Many

a.
$y = 4x - 3$
$12x - 3y = 9$

b.
$y = -2x + 5$
$4x - 8y = 24$

c.
$y = 3x - 10$
$6x - 2y = 12$

7. This morning you bought 6 bolts and 8 nuts for $1.22. You had to go back and get some more in the afternoon and bought 9 bolts and 5 nuts for $1.55. Write and solve a system of equations to find the cost of each bolt and each nut.

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

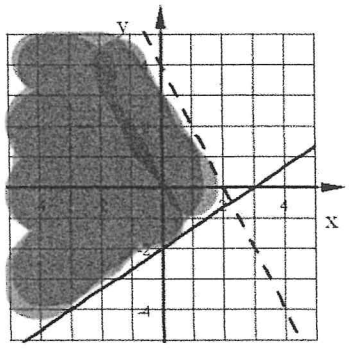
3. a.

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

b.

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

4.



5. 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.

6. a. Many b. One c. None

7. Bolts are \$0.15 each and Nuts are \$0.04 each