College Algebra Chapter 5 Review

For the following 6 problems, solve one by each method - elimination, substitution, Cramer's Rule, and the inverse of the coefficient matrix. The remaining problems may be solved using any method.

1. x + 7y = -38
   7x + 7y = -14

2. x + 6y = -2
   -3x + 7y = 6

3. x - 2y = -2
   5x - y = -10

4. 6x + 4y = -4
   3x + y = -7

5. -3x – 5y = 19
   -6x – 10y = 17

6. x + 4y = -25
   x – y = -10

Solve.

7. Tickets for the school play cost $6 for students and $9 for adults. On opening night, all 360 seats were filled and the box office revenues were $2610. How many student and how many adult tickets were sold?

8. In a chemistry class, 3 liters of a 4% silver iodide solution must be mixed with a 10% solution to get a 6% solution. How many liters of the 10% solution are needed?

9. Find the determinant of the matrix: $\begin{bmatrix} -1 & 2 \\ 2 & 3 \end{bmatrix}$

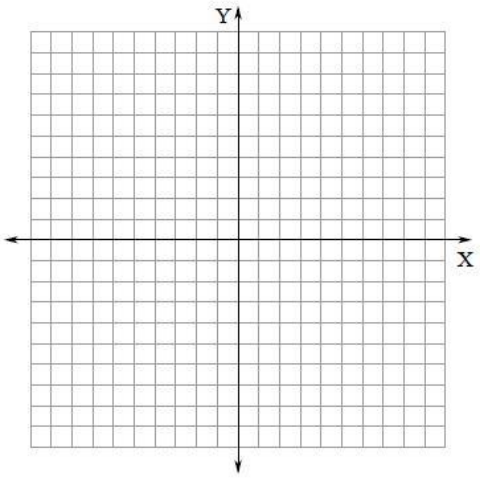
10. Let B = $\begin{bmatrix} -1 & 4 & 7 & -3 \end{bmatrix}$ Find -4B

11. Let A = $\begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$ and B = $\begin{bmatrix} 0 & 4 \\ -1 & 6 \end{bmatrix}$ Find 2A + B

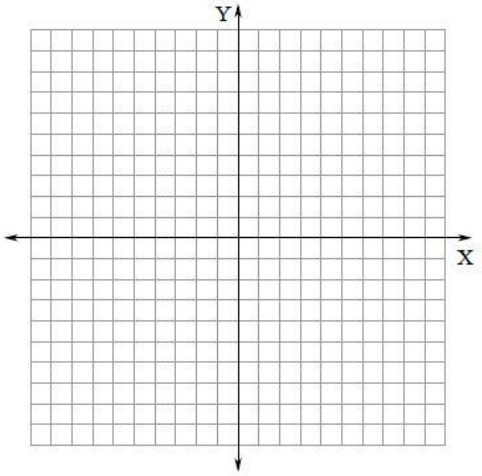
12. Use the inverse of the coefficient matrix to solve this system of equations.
    5x + 22y = 13
    2x + 9y = 6

13. Find the product, if possible. $\begin{bmatrix} -4 & -4 & 9 \\ -5 & 6 & -6 \end{bmatrix} \cdot \begin{bmatrix} -1 \\ -8 \\ 4 \end{bmatrix}$

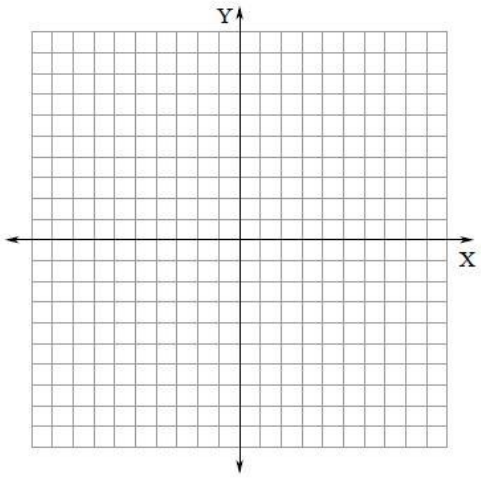
14. Graph the system of inequalities.
$2x + y \leq 4$
$y - 1 \leq 0$



15. A 4-H member raises only geese and pigs. She wants to raise no more than 16 animals, including no more than 10 geese. She spends $5 to raise a goose and $15 to raise a pig, and she has $180 available for this project. Each goose produces $6 in profit, and each pig produces $20 in profit. How many of each animal should she raise to maximize her profit? What is her maximum profit?



16. Graph the system of inequalities and find the coordinates of the vertices.
$x + 2y \leq 2$
$x + y \geq 0$



17. Find A^{-1} if it exists. $A = \begin{bmatrix} -2 & -3 \\ -3 & 9 \end{bmatrix}$

18. Find A^{-1} if it exists. $A = \begin{bmatrix} 2 & -5 \\ 1 & 4 \end{bmatrix}$