Review –Chapter 8 & Sec 9.5

1) Solve the system of equations.

a) $\begin{cases} xy = 8 \\ x + y = -6 \end{cases}$

b) $\begin{cases} x^2 - xy = 20 \\ x - 2y = 3 \end{cases}$

2) Solve the system of equations by substitution.

$\begin{cases} 2x - 3y = 4 \\ x - 5y = -6 \end{cases}$

3) Solve using the elimination method

$\begin{cases} 2x^2 + y^2 = 4 \\ 3x^2 - 2y^2 = 6 \end{cases}$

4) Solve using the elimination method

$\begin{cases} 6x + 3y = 36 \\ 2x - 6y = 40 \end{cases}$

5) Find value of the following determinant

$$\begin{vmatrix} 3 & -2 \\ 1 & -4 \end{vmatrix}$$

6) Solve for x

$$\begin{vmatrix} 8 & 2 \\ x & 3 \end{vmatrix} = 7$$

7) Graph the equations in the given system to determine the number of solutions. Then solve the system to find points of intersection.

a) $\begin{cases} x^2 + y^2 = 9 \\ y = x^2 - 3 \end{cases}$

b) $\begin{cases} x^2 + y^2 = 4 \\ y^2 - x^2 = 1 \end{cases}$

8) Check whether Cramer's Rule can be used to solve the systems below. If yes, use Cramer's Rule to solve them.

a) $\begin{cases} x - y + 4z = 2 \\ 2x + z = 5 \\ -x + y - 4z = -3 \end{cases}$

b) $\begin{cases} 6x - 3y = -6 \\ -4x + y = -10 \end{cases}$

c) $\begin{cases} 2x - 4y = 5 \\ -4x + 8y = 10 \end{cases}$

9) Check whether (-4,1) is a solution of the system $\begin{cases} 2x+15y=7 \\ 10x-42y=22 \end{cases}$

10) Solve the system of equations. [Hint: Let u = $\frac{1}{x}$ and v = $\frac{1}{y}$, and solve for u and v.]

$$\begin{cases} \frac{2}{x}+\frac{3}{y}=18 \\ \frac{1}{x}-\frac{2}{y}=-5 \end{cases}$$

11) A restaurant manager wants to purchase 200 sets of dishes. One design costs $25 per set while another costs $45 per set. If she only has $7400 to spend, how many of each design should be ordered?

Answers:

1)a) (-2,-4), (-4, -2); b) (5,1), (-8, -11/2)

2) (38/7, 16/7)

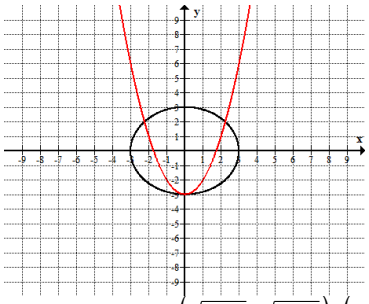
3) $(\sqrt{2},0),(-\sqrt{2},0)$

4) (8,-4)

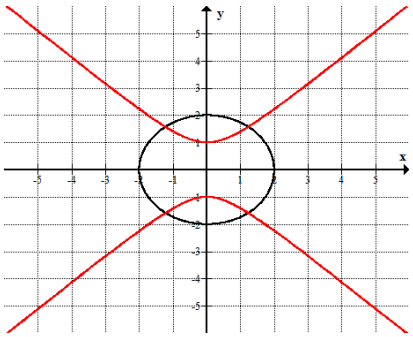
5) -10;

6) 8.5

7) a) 3 solutions; (0,-3), $(\sqrt{5},2),(-\sqrt{5},2)$



b) 4 solutions; $\left(\sqrt{3/2},\sqrt{5/2}\right),\left(-\sqrt{3/2},\sqrt{5/2}\right),\left(\sqrt{3/2},-\sqrt{5/2}\right),\left(-\sqrt{3/2},-\sqrt{5/2}\right)$



8) a) can't be used; b) (6,14); c) can't be used;

9) no

10) (1/3, ¼)

11) 130 of $25 and 70 of $45.