**MAT 105 – SPRING 2010**
**Introductory Algebra**

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**Problem Set 4**
**April, 2010**

Name : _____

1. Solve the system

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

by sketching the graphs.

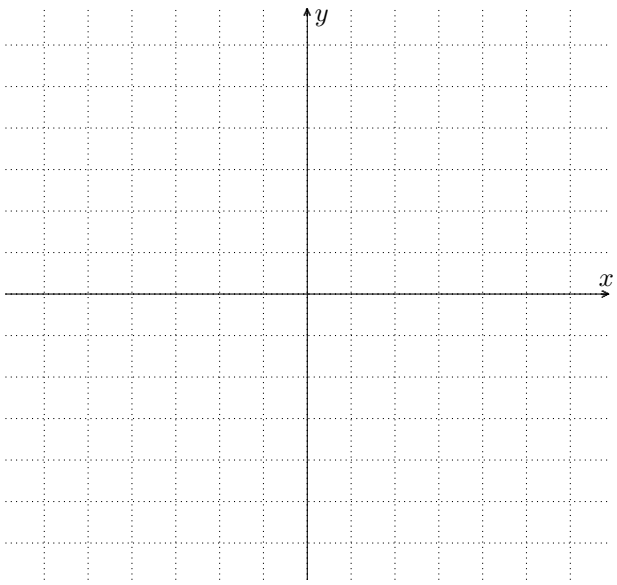


Figure 1:

2. Solve each of the following systems of equations using the addition–subtraction method.

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

- $\begin{cases} x + 2y = 7 \\ 3x - y = 7 \end{cases}$

3. Use the substitution method to solve each of the following systems of equations:

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

- $\begin{cases} x = 2y + 1 \\ x + 3y = 11 \end{cases}$

4. Decide which of the following systems are dependent, independent or inconsistent.

- $\begin{cases} -x + 3y = 6 \\ \frac{1}{3}x - y = 4 \end{cases}$

- $\begin{cases} x + y = 1 \\ x - y = -16 \end{cases}$

- $\begin{cases} 2x + y = 4 \\ \frac{1}{4}x = 1 - \frac{1}{2}x \end{cases}$

5. Classify each of the following equations as linear, quadratic or none of the above.
   - $x^2 = x(1 + 5x)$
   - $x(x + 1)(x - 1) = x^3 + 2$
   - $x(x^2 + 2) = 1$

6. Solve the following quadratic equations by factoring.
   - $3x^2 - 7x = 0$
   - $x^2 + 3x - 10 = 0$

7. Solve each of the following equations.
   - $x^2 = \dfrac{4}{25}$
   - $x^2 + \dfrac{7}{100} = 0$
   - $36x^2 - 49 = 0$

8. Use the method of completing the square to solve each of the following quadratic equations.

   - $x^2 - 2x - 8 = 0$

9. Use the quadratic formula to solve each of the following equations.

   - $x^2 - x + 3 = 0$

   - $3x^2 + 2x - 1 = 0$

   - $x^2 - 6x + 9 = 0$