Algebra 1

Topic: Solving Systems of Linear Equations by Graphing

> **Instructions**
>
> Solve the following systems of linear equations by graphing. Show all your work and check your solutions.

Practice Problems

1. **Solve the following systems by graphing:**

   (i) $y = 2x + 1$
   $y = -x + 4$

   (ii) $y = -3x + 5$
   $y = 2x - 1$

   (iii) $y = x - 3$
   $y = -2x + 4$

   (iv) $y = 4x - 2$
   $y = -x + 5$

   (v) $y = \frac{1}{2}x + 2$
   $y = -x + 1$

2. **Graph the following systems and identify the solution:**

   (i) $y = 3x - 2, \quad y = -x + 1$

   (ii) $y = -x + 4, \quad y = 2x - 3$

   (iii) $y = x + 5, \quad y = -3x + 2$

   (iv) $y = 2x + 1, \quad y = -x + 3$

   (v) $y = 4x - 2, \quad y = -2x + 1$

3. **For each system, determine if the lines are parallel, coincident, or intersecting:**

(i) $y = 2x + 3, \quad y = 2x - 1$ (iv) $y = -x + 2, \quad y = -x + 4$

(ii) $y = -x + 4, \quad y = x + 1$

(iii) $y = 3x - 2, \quad y = -3x + 5$ (v) $y = \frac{1}{2}x + 1, \quad y = \frac{1}{2}x - 3$

Multiple-Choice Questions

1. The solution to the system $y = 2x + 1$ and $y = -x + 4$ is:

   A. $(1, 3)$ C. $(3, 7)$

   B. $(2, 5)$ D. $(0, 1)$

2. The system $y = -3x + 5$ and $y = 2x - 1$ represents:

   A. Parallel lines   C. One intersection point

   B. Coincident lines   D. No solution

3. What is the solution to the system $y = x - 3$ and $y = -2x + 4$?

   A. $(2, -1)$ C. $(3, 0)$

   B. $(1, -2)$ D. $(4, 1)$

4. If the lines of the system $y = 4x - 2$ and $y = -x + 5$ are graphed, the solution is:

   A. $(1, 2)$ C. $(0, 3)$

   B. $(2, 3)$ D. $(0, 4)$

5. The lines $y = x + 3$ and $y = 2x - 1$ are:

   A. Parallel lines   C. Intersecting lines at one point

   B. Coincident lines   D. No solution

6. The system of equations $y = 3x - 2$ and $y = -x + 1$ has:

   A. One solution   C. Infinite solutions

   B. No solution   D. Parallel lines

Challenge Problem

Solve the system by graphing:

$$y = \frac{1}{2}x + 3 \quad \text{and} \quad y = -x + 1$$

What is the solution?