

I. Tell whether the ordered pair is a solution of the system of linear equations. (4 pts each)

1. $(1, -2)$; $\begin{cases} 2x + y = 0 \\ -x + 2y = 5 \end{cases}$

$2(1) - 2 = 0$
 $0 = 0$
 $-1 + 2(-2) = 5$
 $-1 - 4 = 5$
 $-5 = 5$
Not a solution

2. $(1, 4)$; $\begin{cases} y = 3x + 1 \\ y = -x + 5 \end{cases}$

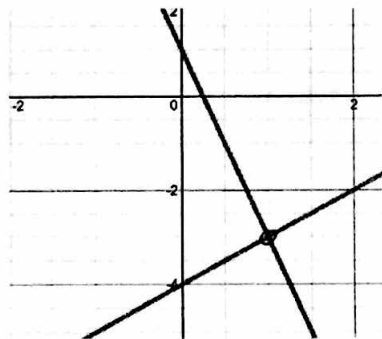
$4 = 3(1) + 1$
 $4 = 4$
 $4 = -1 + 5$
 $4 = 4$ ✓

It is a solution

II. Use the graph to solve the system of equations. Check your answers. SHOW YOUR WORK!
(6 pts total for each problem; 4 for problem, 2 for check)

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

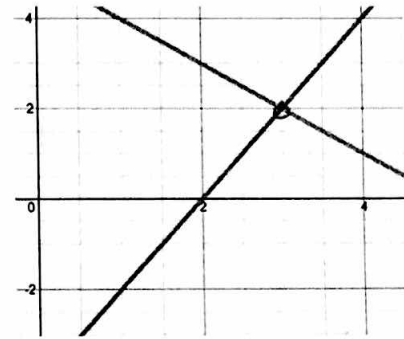
$(1, -3)$
 $1 - (-3) = 4$
 $4(1) + (-3) = 1$
 $4 - 3 = 1$
 $1 = 1$



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

$3 + 2 = 5$
 $5 = 5$ ✓
 $2 - 2(3) = -4$
 $-4 = -4$ ✓

$(3, 2)$

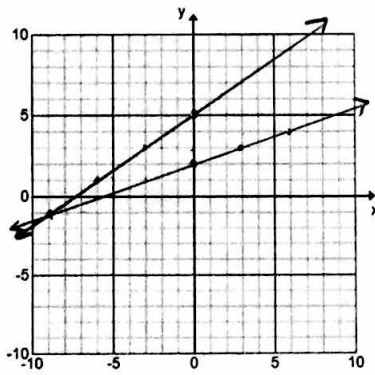


III. Solve the system of linear equations by graphing. Check your answer. SHOW YOUR WORK!
(8 pts total for each problem; 6 for problem, 2 for check)

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

$m = \frac{1}{3}; b = 2$
 $m = \frac{2}{3}; b = 5$

$(-9, -1)$

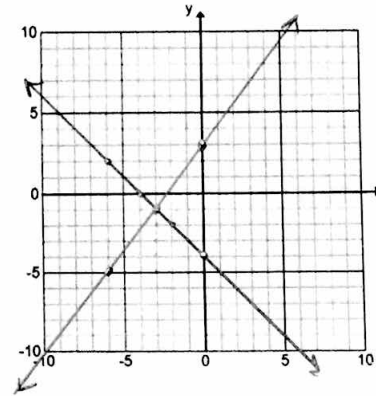


Check your work:

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

$m = -1; b = -4$
 $m = \frac{4}{3}; b = 3$

$(-3, -1)$



Check your work:

$-1 = -(-3) - 4$
 $-1 = -1$ ✓
 $-1 = \frac{4}{3}(-3) + 3$
 $-1 = -4 + 3$
 $-1 = -1$

IV. Solve the system of linear equations by substitution. (6 pts each)

7.
 $y = 3x + 14$
 $y = -4x$
 $-4x = 3x + 14$
 $-3x - 3x$
 $-7x = 14$
 $x = -2$
 $y = -4(-2)$
 $y = 8$
 $(-2, 8)$

8.
 $y = x + 3$
 $3x + y = -1$
 $3x + x + 3 = -1$
 $4x + 3 = -1$
 $-3 -3$
 $4x = -4$
 $x = -1$
 $y = -1 + 3$
 $y = 2$
 $(-1, 2)$

V. Write a system of linear equations that has the ordered pair as its solution. (13 pts each)

9. A math test is worth 100 points and has 38 problems. Each problem is worth either 5 points or 2 points. How many problems of each point value are on the test?

(1 pt.) Let $x =$ # of 5pt problems (1 pt.) Let $y =$ # of 2pt problems

(3 pts) Equation 1: $x + y = 38$ (3 pts) Equation 2: $5x + 2y = 100$

(3 pts) Solve: $x = 38 - y$
 $x = 38 - 30$
 $x = 8$
 $5(38 - y) + 2y = 100$
 $190 - 5y + 2y = 100$
 $-3y = -90$
 $y = 30$
 $(8, 30)$ | Check:
 $5(8) + 2(30) = 100$
 $100 = 100 \checkmark$

(2 pts) Answer: The math test will have 8 five pt problems and 30 2pt problems

10. A company that offers tubing trips down a river rents tubes for a person to use and "cooler" tubes to carry food and water. A one person tube is \$20 and a "cooler" tube is \$12.50. A group spends \$270 to rent a total of 15 tubes. Write a system of linear equations that represents this situation. How many of each type of tube does the group rent?

(1 pt.) Let $x =$ # of 1 person tubes (1 pt.) Let $y =$ # of cooler tubes

(3 pts) Equation 1: $20x + 12.5y = 270$ (3 pts) Equation 2: $x + y = 15$

(3 pts) Solve: $x = 15 - y$
 $x = 15 - 4$
 $x = 11$
 $20(15 - y) + 12.5y = 270$
 $300 - 20y + 12.5y = 270$
 $-7.5y = -30$
 $y = 4$
 $(11, 4)$ | Check:
 $20(11) + 12.5(4) = 270$
 $220 + 50 = 270$
 $270 = 270 \checkmark$

(2 pts) Answer: The group rented eleven one person tubes and four "cooler" tubes.