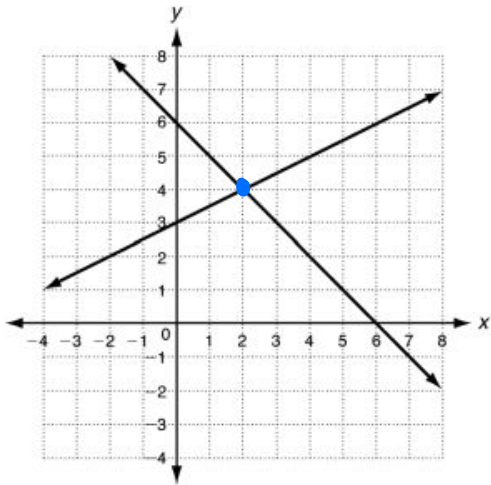


Algebra 1A Final Exam Review Day 3

1. What is the solution to the system graphed below?



$(2, 4)$

2. Solve the system using **substitution**:

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

$$\begin{array}{r} 4x - 1 = 3x + 6 \\ -3x \quad -3x \\ \hline x - 1 = 6 \\ +1 \quad +1 \\ \hline x = 7 \end{array}$$

$$\begin{aligned} y &= 4(7) - 1 \\ y &= 28 - 1 \\ y &= 27 \end{aligned}$$

solution: $(7, 27)$

3. Solve the system by **substitution**:

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

$$\begin{aligned} 4x &= 2(2x - 3) + 6 \\ 4x &= 4x - 6 + 6 \\ 4x &= 4x \quad \checkmark \end{aligned}$$

infinite solutions

4. Solve the system by **elimination**.

$$\begin{array}{r} \begin{cases} x + y = -1 \\ x - y = -7 \end{cases} \\ + \\ \hline 2x = -8 \\ \frac{2x}{2} = \frac{-8}{2} \\ x = -4 \end{array}$$

$$\begin{array}{r} -4 + y = -1 \\ +4 \quad +4 \\ \hline y = 3 \end{array}$$

Solution: (-4, 3)

5. Solve the system by **elimination**.

$$\begin{array}{r} \begin{cases} 2x + 5y = 4 \\ 3x + 5y = 1 \end{cases} \\ - \\ \hline -1x = 3 \\ \frac{-1x}{-1} = \frac{3}{-1} \\ x = -3 \end{array}$$

$$\begin{array}{r} 2(-3) + 5y = 4 \\ -6 + 5y = 4 \\ +6 \quad +6 \\ \hline 5y = 10 \\ \frac{5y}{5} = \frac{10}{5} \\ y = 2 \end{array}$$

Solution: (-3, 2)

6. What is the **first step** in solving the following system of equations using elimination?

$$\begin{cases} 7x - 10y = 12 \\ -x + 8y = 11 \end{cases}$$

Multiply the bottom equation by 7.

7. Solve the system using **elimination**.

$$\begin{array}{l} 4(-3x + 2y = 4) \rightarrow -12x + 8y = 16 \\ 3(4x - 13y = 5) \rightarrow 12x - 39y = 15 \\ \hline \end{array}$$

$$\begin{array}{r} -3x + 2(-1) = 4 \\ -3x - 2 = 4 \\ +2 \quad +2 \\ \hline -3x = 6 \\ \frac{-3x}{-3} = \frac{6}{-3} \\ x = -2 \end{array}$$

$$\begin{array}{r} -31y = 31 \\ \frac{-31y}{-31} = \frac{31}{-31} \\ y = -1 \end{array}$$

Solution: (-2, -1)

8. Two gyms offer a two-month long, bootcamp style workout membership. Gym A charges \$4 per session plus a one-time \$50 fee. Gym B charges \$6 per session plus a one-time \$30 fee. After how many sessions is the cost of the membership the same at both gyms?

a. **Write** a system of equations:

Cost of Gym A equation:

$$y = 4x + 50$$

Cost of Gym B equation:

$$y = 6x + 30$$

b. **Solve** your system:

$$\begin{array}{r} 4x + 50 = 6x + 30 \\ -4x \quad -4x \\ \hline 50 = 2x + 30 \\ -30 \quad -30 \\ \hline 20 = 2x \\ \frac{20}{2} = \frac{2x}{2} \quad \boxed{x=10} \end{array}$$

$$\begin{array}{l} y = 4(10) + 50 \\ 40 + 50 \\ y = \$90 \end{array}$$

it will cost \$90 for 10 months.

9. Mr. Frankel bought 7 tickets to a puppet show at the children's theater. He spent a total of \$33. If children's tickets cost \$3 each and adult tickets cost \$9 each, how many adult tickets, a , and children's tickets, c , did he buy? Write and solve a system of equations to determine the answer.

a. **Write** your system:

Number of tickets purchased:

$$c + a = 7$$

Total cost of tickets purchased:

$$3c + 9a = 33$$

b. Now, **solve** your system:

$$\begin{array}{l} -3(c + a = 7) \rightarrow -3c - 3a = -21 \\ 3c + 9a = 33 \\ \hline 6a = 12 \\ \frac{6a}{6} = \frac{12}{6} \\ a = 2 \end{array}$$

$$\begin{array}{l} c + 2 = 7 \\ -2 \quad -2 \\ \hline c = 5 \end{array}$$

2 adult tickets, 5 children tickets