

Algebra II ~ Chapter 3 Review

Name _____ Hr. _____

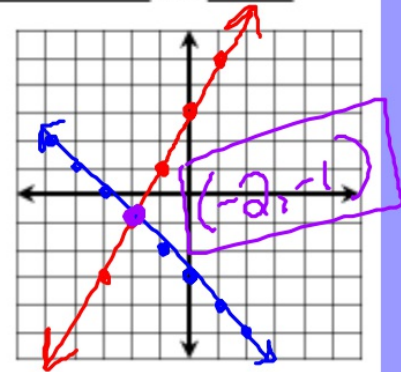
1. Solve the system using **Graphing**:

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

(Note: In the original image, the second equation is written as $x + y = -3$ with a circled y and $-x$ written below it, and the result $y = -x - 3$ is written to the right.)

2. If a system of linear equations has **NO SOLUTIONS**, what would the graph of the lines look like?

PARALLEL LINES!



3. Solve the system using **Substitution:**

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

$$\begin{aligned} x + 2x + 7 &= -2 \\ 3x + 7 &= -2 \end{aligned}$$

$$\begin{array}{r} 3x + 7 = -2 \\ \underline{-7 \quad -7} \\ 3x = -9 \\ \underline{\quad \quad 3} \quad X = -3 \checkmark \end{array}$$

$$\begin{aligned} y &= 2(-3) + 7 \\ y &= -6 + 7 \\ y &= 1 \checkmark \end{aligned}$$

$(-3, 1)$

4. Solve the system using **Elimination:**

$$\begin{cases} x + y = 10 \\ x - y = -2 \end{cases}$$

$$\begin{array}{r} 4 + y = 10 \\ \underline{-4 \quad \quad -4} \\ y = 6 \checkmark \end{array}$$

$(4, 6)$

$$\begin{aligned} 2x &= 8 \\ \underline{\quad \quad 2} \quad \underline{\quad \quad 2} \\ X &= 4 \checkmark \end{aligned}$$

5. Solve the system using any **method**:

$$\begin{cases} -2x - y - z = 7 \\ y + 3z = 17 \\ \frac{2z}{2} = \frac{10}{2} \end{cases}$$

$$z = 5v$$

$$y + 3(5) = 17$$

$$y + 15 = 17$$

$$y = 2v$$

$$\begin{array}{r} -2x - 2 - 5 = 7 \\ -2x - 7 = 7 \\ \hline \end{array}$$

$$\begin{array}{r} -2x = 14 \\ \hline -2 \quad -2 \end{array}$$

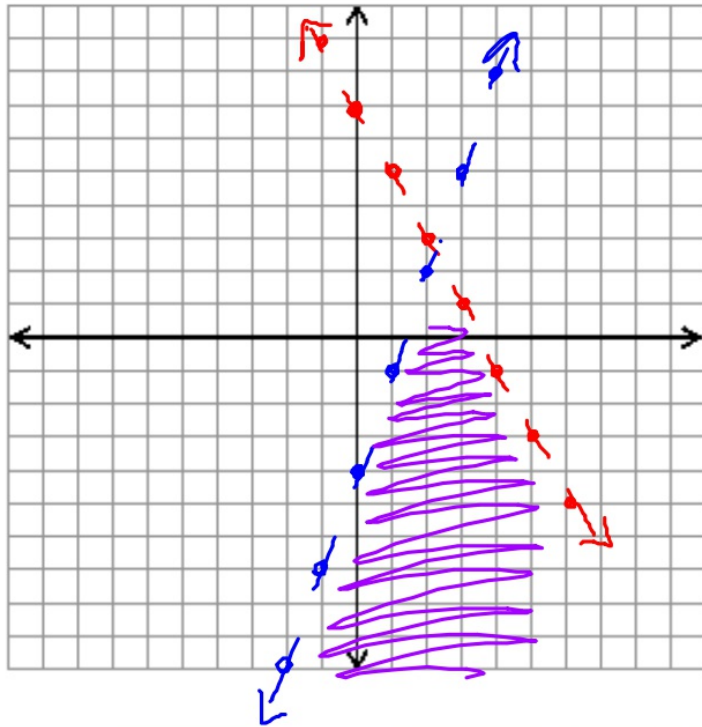
$$x = -7v$$

$$\boxed{(-7, 2, 5)}$$

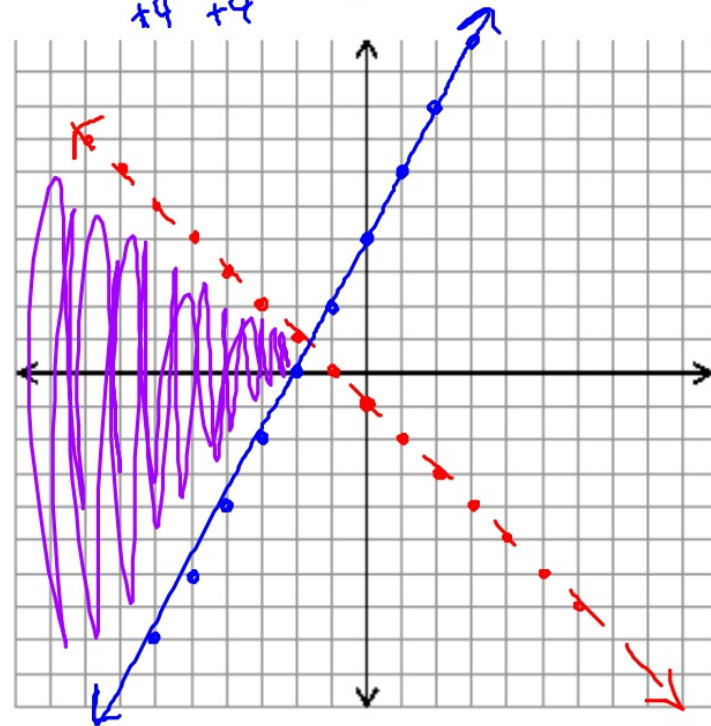
$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Graph the solutions of each system on inequalities:

6. $y < -2x + 7$ •
 $y < 3x - 4$ •



7. $y < -x - 1$ •
 $y - 4 \geq 2x$ •
 $+4 \quad +4$ $y \geq 2x + 4$

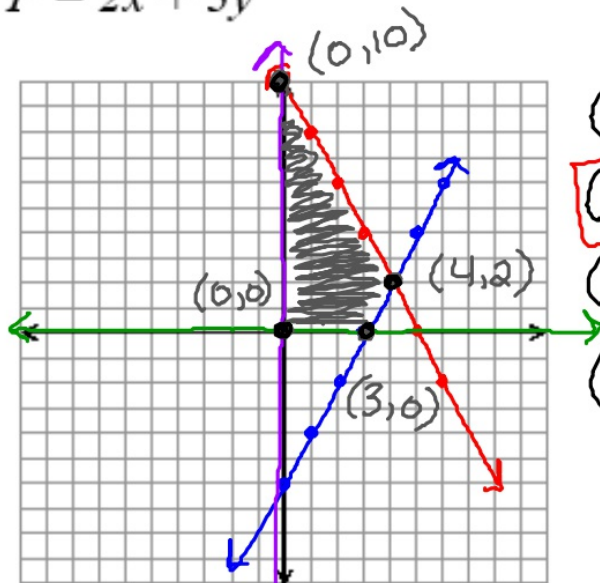


8. Graph the system of constraints.

$$\begin{cases} y \leq -2x + 10 & \bullet \\ y \geq 2x - 6 & \bullet \\ x \geq 0, y \geq 0 & \bullet \end{cases}$$

Name all the vertices. Find the value of x and y that **Maximize** the objective function:

$$P = 2x + 3y$$



$$P = 2x + 3y$$
$$(0,0) P = 2(0) + 3(0) = 0$$

$$(0,10) P = 2(0) + 3(10) = 30$$

$$(4,2) P = 2(4) + 3(2) = 14$$

$$(3,0) P = 2(3) + 3(0) = 6$$

Vertices: $(0,0)$
 $(4,2)$
 $(3,0)$
 $(0,10)$

Maximum: $(0,10)$

9. A student says the system of equations is represented by the matrix. What errors did the student make?
Circle the mistakes in the matrix and then rewrite the correct matrix in the box provided.

$$\begin{cases} 5x - 2y + 2z = -7 \\ 3x + 4y = 11 \\ 2x - 6y + 5z = 5 \end{cases}$$

$$\left[\begin{array}{ccc|c} 5 & -2 & 2 & -7 \\ 3 & 4 & 0 & 11 \\ 2 & -6 & 5 & 5 \end{array} \right]$$

5	-2	2	-7
3	4	0	11
2	-6	5	5

Write a system of equations that describe the situation and then solve the system using any method you like.

10. The drama club sold 1,500 tickets for the end of the year performance. Admission prices were \$12 for adults and \$6 for students. The total amount collected at the box office was \$16,200. How many adults and how many students attended the play?

EQUATIONS: $\begin{cases} a + s = 1,500 \\ 12a + 6s = 16,200 \end{cases}$

$$\begin{array}{r} -6a - 6s = -9,000 \\ 12a + 6s = 16,200 \\ \hline 6a = 7,200 \\ \frac{6a}{6} = \frac{7,200}{6} \end{array}$$

Adults: 1,200

Students: 300

$$\boxed{a = 1,200}$$

$$\begin{array}{r} 1,200 + s = 1,500 \\ -1,200 \quad -1,200 \\ \hline \boxed{s = 300} \end{array}$$

11. Jenny bought 3 pairs of shoes and 4 pairs of jeans for a total of \$96.00. The next day she went back and bought 4 pairs of shoes and 3 pairs of jeans for \$93.00. How much were the shoes and jeans selling for?

EQUATIONS:

$$\begin{array}{l} 4x \\ -3x \end{array} \quad \boxed{\begin{array}{l} 3s + 4j = 96 \\ 4s + 3j = 93 \end{array}}$$

$$\begin{array}{r} \cancel{12s} + 16j = 384 \\ -\cancel{12s} - 9j = -297 \\ \hline \end{array}$$

$$\frac{7j}{7} = \frac{105}{7}$$

$$\boxed{j = \$15.00}$$

Shoes: \$12.00

Jeans: \$15.00

$$3s + 4(15) = 96$$

$$\begin{array}{r} 3s + 60 = 96 \\ -60 \quad -60 \\ \hline \end{array}$$

$$\frac{3s}{3} = \frac{36}{3}$$

$$\boxed{s = \$12.00}$$