Name Key Date _____

Solving Systems of Two Equations

Determine if the given points are solutions to each given system. (Substitute the values to make sure they satisfy both equations)

1) $y = 2x + 3$ (2, 3)
$y = 3x + 1$

$3 = 2(2)+4$
$3 = 7$ NO
X

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

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

$-2 = 3(2) - 8$
$-2 = 6 - 8$
$-2 = -2$ ✓ yes

Determine if the following systems of equations have zero, one, or infinite solutions.

3) $y = \frac{2}{3}x + 5$
$y = \frac{2}{3}x - 4$

zero solutions

4) $y = -\frac{3}{4}x + 5$
$y = \frac{3}{4}x - 2$

one solution

5) $y = 4x + 5$
$3y = 12x + 15$
$\frac{3}{3} \quad \frac{12x}{3} \quad \frac{15}{3}$
$y = 4x + 5$

Infinite Solutions

6) $y = \frac{2}{5}x - 2$
$y = \frac{5}{2}x + 2$

one solution

7) $y = -x + 5$
$y = 2x + 5$

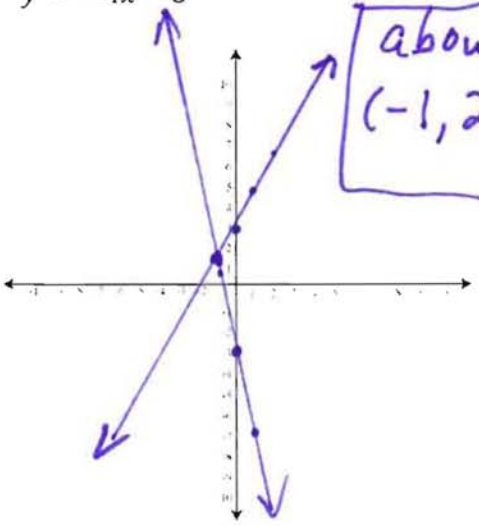
one Solution

8) $2y = 4x + 6$
$\frac{2}{2} \quad \frac{4x}{2} \quad \frac{6}{2}$
$y = 2x - 3$
$y = 2x + 3$

one solution

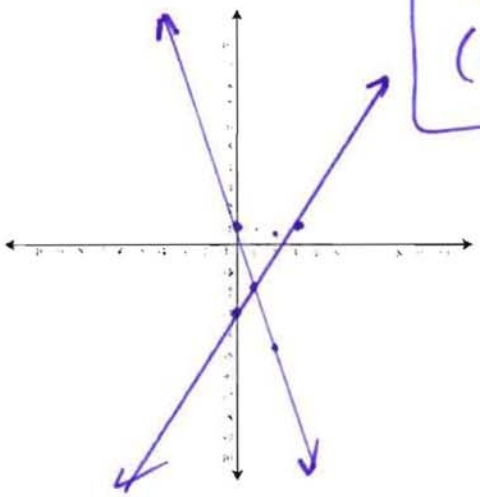
Solve the following systems by graphing. (Round your answers to the nearest integer)

9) $y = 2x + 3$
$y = -4x - 3$



about (-1, 2)

10) $y = -3x + 1$
$y = \frac{4}{3}x - 3$



about (1, -2)

Solve each system of equations by substitution

11) $y = 2x + 1$

$2x + y = 13$

$2x + (2x+1) = 13$

$4x + 1 = 13$

$-1 \quad -1$

$\frac{4x}{4} = \frac{12}{4}$

$x = 3$

$y = 2x + 1$

$y = 2(3) + 1$

$y = 6 + 1$

$y = 7$

$(3, 7)$

12) $y = x + 7$

$y = -2x - 2$

$x + 7 = -2x - 2$

$+2x \quad +2x$

$3x + 7 = -2$

$-7 \quad -7$

$\frac{3x}{3} = \frac{-9}{3}$

$x = -3$

$y = -3 + 7$

$y = 4$

$(-3, 4)$

13) $y = 3x - 4$

$y = -1x$

$3x - 4 = -1x$

$+1x \quad +1x$

$4x - 4 = 0$

$+4 \quad +4$

$\frac{4x}{4} = \frac{4}{4}$

$x = 1$

$y = -1x$

$y = -1(1)$

$y = -1$

$(1, -1)$

14) $y = 2x + 1$

$3x - y = 1$

$3x - (2x+1) = 1$

$3x - 2x - 1 = 1$

$x - 1 = 1$

$+1 \quad +1$

$x = 2$

$y = 2x + 1$

$y = 2(2) + 1$

$y = 5$

$(2, 5)$

Solve each system of equations by elimination

15) $x + 2y = 6$

$-x + y = -3$

$0 + 3y = 3$

$\frac{3y}{3} = \frac{3}{3}$

$y = 1$

$x + 2y = 6$

$x + 2(1) = 6$

$x + 2 = 6$

$-2 \quad -2$

$x = 4$

$(4, 1)$

16) $2x + y = 4$

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

$-2x - 6y = 6$

$(+) \quad 2x + y = 4$

$-5y = 10$

$\frac{-5y}{-5} = \frac{10}{-5}$

$y = -2$

$2x + y = 4$

$2x + (-2) = 4$

$+2 \quad +2$

$\frac{2x}{2} = \frac{6}{2}$

$x = 3$

$(3, -2)$

17) $x + 2y = 1$

$-1(x - 3y = -4)$

$-x + 3y = 4$

$x + 2y = 1$

$\frac{5y}{5} = \frac{5}{5}$

$y = 1$

$x + 2y = 1$

$x + 2(1) = 1$

$x + 2 = 1$

$-2 \quad -2$

$x = -1$

$(-1, 1)$

17) $3x + 2y = -2$

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

$-3x - 9y = -12$

$3x + 2y = -2$

$\frac{-7y}{-7} = \frac{-14}{-7}$

$y = 2$

$x + 3y = 4$

$x + 3(2) = 4$

$x + 6 = 4$

$-6 \quad -6$

$x = -2$

$(-2, 2)$

Challenge on Back

Challenge 1:

Solve the following system of equations by elimination (Hint: you will need to multiply both equations by two different numbers.

$3(2x + 3y = 11)$

$-2(3x + 2y = 9)$

$6x + 9y = 33$

$-6x - 4y = -18$

$\frac{5y}{5} = \frac{15}{5}$

$y = 3$

$2x + 3y = 11$

$2x + 3(3) = 11$

$2x + 9 = 11$

$-9 \quad -9$

$\frac{2x}{2} = \frac{2}{2}$

$x = 1$

$(1, 3)$

Challenge 2:

Solve the following system of equations by any method.

I chose Substitution since y is by its self.

$y = 2x + 3$

$2x - y = 4$ ⟶ $2x - (2x+3) = 4$

$2x - 2x - 3 = 4$

$-3 = 4$???

What do you think the result means?

No Solution

or

Zero Solutions

Challenge 3:

Solve the following system of equations by any method.

Substitution

$y = 3x + 2$

$6x - 2y = -4$

$6x - 2(3x+2) = -4$

$6x - 6x - 4 = -4$

$-4 = -4$???

What do you think the result means?

Infinite Solutions