Name: Solutions

Date : _____

Grade 9

Mid-Year Review 06

Solve System!

1. What is the point of intersection between

$y = 2x + 3$ and $3y + 15 = 12x$

isolate y

$3y = 12x - 15$

$y = 4x - 5$

$2x + 3 = 4x - 5$

$3 = 2x - 5$

$8 = 2x$

$4 = x$

Get y

$y = 2x + 3$

$y = 2(4) + 3$

$y = 8 + 3$

$y = 11$

POI: (4 , 11)

2. What is the point of intersection between

$2y - 5x - 36 = 0$ and $0.5y = -1.5x - 13$

$2y = 5x + 36$

$y = 2.5x + 18$

$y = -3x - 26$

$2.5x + 18 = -3x - 26$

$5.5x + 18 = -26$

$5.5x = -44$

$x = -8$

let's find y

$y = -3(-8) - 26$

$y = 24 - 26$

$y = -2$

POI: (-8 , -2)

3. What is the point of intersection between

$3x = y + 4$ and $7x - y + 16 = 0$

$3x - 4 = y$

$y = 3x - 4$

$7x + 16 = y$

$y = 7x + 16$

Solve

$3x - 4 = 7x + 16$

$-4 = 4x + 16$

$-20 = 4x$

$-5 = x$

Solve y!

$y = 3x - 4$

$y = 3(-5) - 4$

$y = -15 - 4$

$y = -19$

POI: (-5 , -19)

4. Consider the following system of linear equations.

$2x + 3y + 6 = 0$

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

Same a different b → parallel

Which of the following statements is true?

A. The system has an infinite number of solutions.

B. The system has a unique solution.

C. The system has no solution.

D. ~~The system has two solutions.~~ Never!

Answer: _____

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5. Given the following system of equations.

$2x - 5y + 12 = 0$

$x - 3y = 4$

What is the solution for this system?

A. (~~1~~, ~~4~~)

B. (~~4~~, ~~0~~)

C. (~~6~~, ~~0~~)

D. (~~6~~, ~~2~~)

$2x - 5y + 12 = 0$ → $y = 0.4x + 2.4$

$x - 3y = 4$ → $y = 0.\overline{3}x - 1.\overline{3}$

$0.4x + 2.4 = 0.\overline{3}x - 1.\overline{3}$

$0.0\overline{6}x + 2.4 = -1.\overline{3}$

$0.0\overline{6}x = -3.7\overline{3}$

$x = -56$

$y = 0.4(-56) + 2.4$

$y = -20$

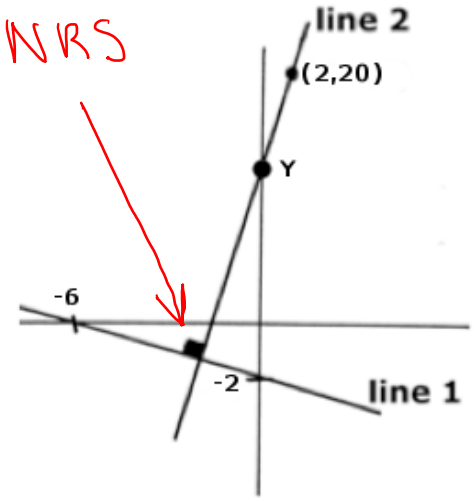
Answer: (-56, -20)

6. Line 1 and line 2 are **perpendicular**.

What is the equation that defines line 1?

What is the equation that defines line 2?

What is the point of intersection between lines 1 and 2?



1. Get line 1

(-6,0) (0,-2)

$a = \frac{-2-0}{0--6} = \frac{-2}{6} = -0.\bar{3}$

$b = -2$

So $y = -0.\bar{3}x - 2$

2. Get line 2 (passing through (2,20))

If $a = \frac{-1}{(-0.\bar{3})} = 3$

$y = ax + b$

$20 = 3(2) + b$

$20 = 6 + b$

$-6 \quad -6$

$14 = b$ So...

$y = 3x + 14$

Solve System

$-0.\bar{3}x - 2 = 3x + 14$

$+0.\bar{3}x \qquad +0.\bar{3}x$

$-2 = 3.\bar{3}x + 14$

$-14 \qquad -14$

$-16 = 3.\bar{3}x$

$\frac{}{3.\bar{3}} \qquad \frac{}{3.\bar{3}}$

$4.8 = x$

$y = 3x + 14$

$y = 3(4.8) + 14$

$y = 28.4$

Rule 1: $y = -0.\bar{3}x - 2$

Rule 2: $y = 3x + 14$

POI: (4.8 , 28.4) .