SYSTEMS OF EQUATIONS

System: Two or More Equations

TYPES OF SOLUTIONS

1. No Solution
2. Infinite
3. One Solution

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SYSTEMS OF EQUATIONS: SUBSTITUTION

STEPS "x = / y ="

1. Solve for single variable

2. Substitute into 2nd Equation

3. Solve for "x/y" individually

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EXAMPLES:

1) $y = 3x$
$x + y = 8$

$(2, 6)$

$x + (3x) = 8$

$\frac{4x}{4} = \frac{8}{4}$

$x = 2$

$y = 3x$

$y = 3(2)$

$y = 6$

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2) $2x + y = 9$
$x + 4y = 1$

$2x + y = 9$
$-2x \quad -2x$

$y = -2x + 9$

$(5, -1)$

$x + 4(-2x + 9) = 1$

$x - 8x + 36 = 1$

$-7x + 36 = 1$
$-36 \quad -36$

$\frac{-7x}{-7} = \frac{-35}{-7}$

$x = 5$

$2x + y = 9$

$2(5) + y = 9$

$10 + y = 9$
$-10 \quad -10$

$y = -1$

3) $2x + y = 5$
$6x + 3y = 15$

$2x + y = 5$
$-2x \quad -2x$
$y = -2x + 5$

$6x + 3(-2x + 5) = 15$
$6x - 6x + 15 = 15$
$15 = 15$ ✓

TRUE Statement = Infinitely Many

4) $-3x + y = 7$
$-3x + y = 8$

$-3x+y=7$
$+3x \quad +3x$
$y = 3x + 7$

$-3x+(3x+7)=8$
0
$7 \neq 8$

FALSE
Statement

$\emptyset$ No Solution