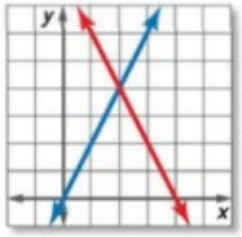
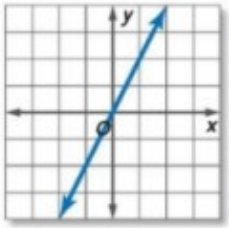
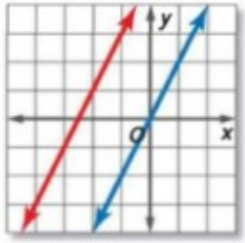
Solving Equations by Graphing

Graph			
Number of Solutions	ONE	Infinite	None
Case	Intersect	Same	Parallel

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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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SYSTEMS OF EQUATIONS: ELIMINATION

STEPS

1. Make Something Cancel
2. Solve for 1st Variable
3. Substitute & Solve for 2nd Variable

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WHICH ONE DO YOU USE?

GRAPHING **SUBSTITUTION** **ELIMINATION**

LOOK AT THE FORM OF THE EQUATIONS

$Ax + By = C$ and $y = mx + b$

Standard

Slope-Int

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GRAPHING	SUBSTITUTION	ELIMINATION
BOTH **y = mx + b**	**ONE** **y = mx + b** **ONE** **Ax + By = C**	**BOTH** **Ax + By = C**
Ex. y = 2x + 4 y = 7x - 2	Ex. y = 4x - 7 4x + y = 2	Ex. 2x - 4y = 8 7x + 4y = 10

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EXAMPLE #1 $x = -1$ $y = 5$ $(-1, 5)$

GRAPHING **SUBSTITUTION** **ELIMINATION**

$y = 3x + 8$
$5x + 2y = 5$

$5x + 2(3x + 8) = 5$
$5x + 6x + 16 = 5$
$11x + 16 = 5$
$-16 \quad -16$
$\frac{11x}{11} = \frac{-11}{11}$

$y = 3x + 8$
$y = 3(-1) + 8$
$y = -3 + 8$
$y = 5$

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EXAMPLE #2

GRAPHING **SUBSTITUTION** **ELIMINATION**

$y = x + 8$

$y = -x + 4$

(-2, 6)

$y = x + 8$

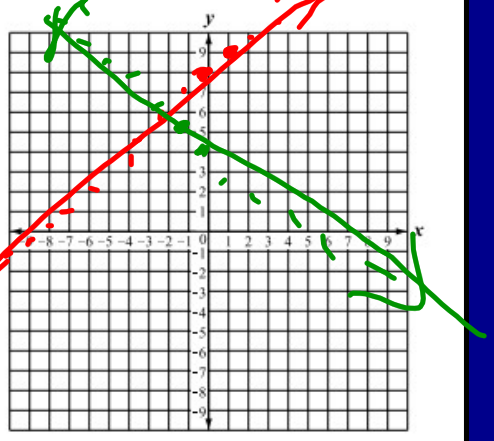
$m = \frac{1}{1}$

$b = 8$

$y = -x + 4$

$m = \frac{-1}{1}$

$b = 4$



EXAMPLE #3

GRAPHING **SUBSTITUTION** **ELIMINATION**

$a - 4b = -8$

$+ \; a + 4b = -8$

$\frac{2a}{2} = \frac{-16}{2}$

$a = -8$

$a - 4b = -8$

$-8 - 4b = -8$

$+8 \qquad +8$

$\frac{-4b}{-4} = \frac{0}{-4}$

$b = 0$