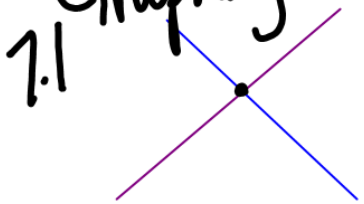
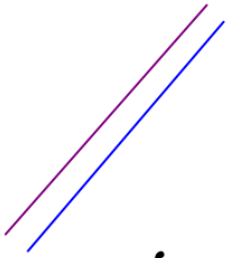
7.2 Systems of Equations

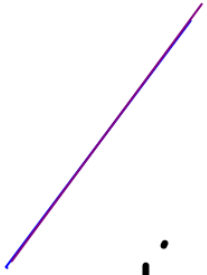
Graphing 7.1



Intersect
1 solution
(x, y)



Parallel
No solution



Same Line
Infinitely
Many
Solutions

Substitution 7.2

$x + 7$

$x = 3$

$3 + 7$

10

1. Solve for 1 equation for 1 variable

$x - y = -7$

$-4x - y = 2$

$-4x - y = 2$ Solve for y

$+4x \quad +4x$ $y =$

$-y = 4x + 2$

$\frac{-y}{-1} = \frac{4x}{-1} + \frac{2}{-1}$

$y = -4x - 2$

2. Substitute into the other equation

$x - y = -7$

$y = -4x - 2$

$x - (-4x - 2) = -7$

$x + 4x + 2 = -7$

$5x + 2 \overset{-2}{=} -7 \overset{-2}{}$

$\frac{5x}{5} = \frac{-9}{5}$

$x = \frac{-9}{5}$

3. Substitute to find other variable

$y = -4x - 2$

$y = \frac{-4}{1} \cdot \frac{-9}{5} - 2$

$y = \frac{36}{5} - 2$

$y = \frac{36}{5} - \frac{10}{6}$

$y = \frac{26}{5}$

$\left(\frac{-9}{5}, \frac{26}{5}\right)$

$y = x - 3$

$x + y = 5$

1. Solve 1 equation for 1 variable

$y = x - 3$

2. Substitute into the other equation

$x + y = 5$

$y = x - 3$

Simplify left side: $x + x - 3 = 5$

$2x - 3 = 5$ (+3 +3)

Solve: $\frac{2x}{2} = \frac{8}{2}$

$x = 4$

3. Substitute to find other variable

$y = x - 3$

$y = 4 - 3$

$y = 1$

$(4, 1)$

$2y + x = 4$

$y - x = -7$

1. Solve 1 equation for 1 variable

$y - x_{+x} = -7_{+x}$

$y = x - 7$

2. Substitute into other equation

$2y + x = 4$

$y = x - 7$

$2(x - 7) + x = 4$

Distribute: $2x - 14 + x = 4$

Combine Like terms: $3x - 14 = 4$

$+14 \quad +14$

Solve: $\frac{3x}{3} = \frac{18}{3}$

$x = 6$

3. Substitute to find other variable

$y =$

$y = x - 7$

$y = 6 - 7$

$y = -1$

$(6, -1)$

$x = 2$

$2y = 4x + 2$

$2y = 4(2) + 2$

$2y = 8 + 2$

$2y = 10$

$\frac{2y}{2} = \frac{10}{2}$

$y = 5$

$(2, 5)$

$-2x + y = 1$

$x + y = 4$

1. Solve 1 equation for 1 variable

p 329

10, 12, 14, 20, 24