

## Review Problems

4-30-19 Pg 1  
Palmer 2311 Precal 1

$$\textcircled{9} \log_5(x+3) - \log_5(2) = \log_5(9)$$

$$\log_5\left(\frac{x+3}{2}\right) = \log_5(9)$$

$$\frac{x+3}{2} = 9$$

$$x+3 = 18$$

$$\boxed{x=15}$$

## Solving System of Equations

$$\textcircled{1} \begin{cases} x - 3y = -4 \\ x + 3y = 2 \end{cases}$$

### Method 1 solve by substitution

- set one equation to equal one variable

$$x - 3y = -4 \rightarrow x = 3y - 4$$

- substitute into the other equation and solve

$$x + 3y = 2 \rightarrow (3y - 4) + 3y = 2 \rightarrow 3y - 4 + 3y = 2$$

$$6y - 4 = 2 \rightarrow 6y = 6 \rightarrow \boxed{y=1}$$

- use the answer  $y=1$  to plug into the first equation

$$x = 3y - 4$$

$$x = 3y - 4 \rightarrow x = 3(1) - 4 \rightarrow x = 3 - 4 = \boxed{-1}$$

- our point of intersection is

$$\boxed{(-1, 1)}$$

### Method 2 solve by elimination

- align your equations.

$$x - 3y = -4$$

$$x + 3y = 2$$

- choose one variable that you wish to eliminate

$$\begin{aligned} x - 3y &= -4 \\ x + 3y &= 2 \end{aligned}$$

• once you have chosen a variable, you multiply one equation so the variable is the same amount but opposite sign.

$$\begin{array}{r} x - 3y = -4 \\ + \quad x + 3y = 2 \\ \hline 2x + 0 = -2 \end{array}$$

\* add the two equations and notice the variable is 0.

• Solve for x.

$$\begin{aligned} 2x &= -2 \\ x &= -2/2 = \boxed{-1} \end{aligned}$$

• Now that you have  $x = -1$  choose either one of the original equations and solve for y.

$$\begin{aligned} x + 3y = 2 &\rightarrow (-1) + 3y = 2 \rightarrow 3y = 2 + 1 \\ &\rightarrow 3y = 3 \quad \boxed{y = 1} \end{aligned}$$

• Point of intersection is  $\boxed{(-1, 1)}$

Types of solutions

