

# Alg Review

## Solving Systems of Equations

ways

1. Elimination  $\rightarrow$  add equations
2. Substitution  $\rightarrow$  solve for x or y
3. graphing  $\rightarrow$  find the intersection

EX.  $3y = 12x - 21 \rightarrow 3y - 12x = -21$

$$\begin{array}{r} 12x + 2y = 1 \\ -12x + 3y = -21 \\ \hline 0 \quad 5y = -20 \\ \quad \quad \frac{5}{5} \quad \frac{-20}{5} \\ \quad \quad \quad y = -4 \end{array}$$

$$12x + (2)(-4) = 1$$

$$12x - 8 = 1$$

$$12x = 9$$

$$x = \frac{9}{12} = \frac{3}{4}$$

① Line up equations

② multiply equations by a #

③ add to eliminate a variable

$$\left(\frac{3}{4}, -4\right)$$

④ solve

⑤ solve

EX.  $140a + 60b = 40$

$$\begin{array}{r} (200a + 30b = 85) \times 2 \\ 400a + 60b = 170 \\ \rightarrow 140a + 60b = 40 \\ \hline \end{array}$$

multiply  
subtract

$$\begin{array}{r} 260a = 130 \\ \hline 260 \quad \quad 260 \\ a = \frac{1}{2} \end{array}$$

$$200\left(\frac{1}{2}\right) + 30b = 85$$

$$\begin{array}{r} 100 + 30b = 85 \quad b = -\frac{1}{2} \\ -100 \quad \quad -100 \\ \hline \end{array}$$

$$\frac{30b}{30} = \frac{-15}{30}$$

$$\left(\frac{1}{2}, -\frac{1}{2}\right)$$

Ex.  $y = -2x + 7$  by substitution  
 $y = x + 5$  by graphing

$$\begin{array}{r} -2x + 7 = x + 5 \\ +2x \quad +2x \end{array}$$

$$\begin{array}{r} 7 = 3x + 5 \\ -5 \quad -5 \end{array}$$

$$\begin{array}{r} 2 = 3x \\ x = \frac{2}{3} \end{array}$$

$$y = \frac{2}{3} + 5$$

$$y = \frac{2}{3} + \frac{15}{3} = \boxed{\frac{17}{3}}$$

$$\left( \frac{2}{3}, \frac{17}{3} \right)$$