

Ch. 12-1 Systems of Linear Eq. in
Two Variables

EBA $\Rightarrow$ just called 'elimination' (EBA better!)

Step 1 $\Rightarrow$ Get X, Y, constants lined up

{2 choices} $\Rightarrow$ Step 2 $\Rightarrow$ Mult. 0, 1, or 2 Eq to get
equal & opposite X or Y coeff.

Step 3 $\Rightarrow$ EBA & solve for X or Y

EBS $\Rightarrow$ just called 'substitution' (EBS better!)

{4 choices} $\Rightarrow$ Step 1 $\Rightarrow$ get any X or Y by itself

Step 2 $\Rightarrow$ EBS & solve for X or Y

How to check solutions $\Rightarrow$ substitute (X, Y)
into Both equations
(must $\checkmark$ in both)

(Ex 1) Check (2, 5), $\begin{cases} x + 2y = 12 \\ 3x - y = 1 \end{cases}$
PS 516

(Ex 2) Check (-5, -2), $\begin{cases} 3x - 2y = -11 \\ 2x + y = 10 \end{cases}$
PS 516

ONE SOLUTION $\Rightarrow$ consistent and independent

∞ solutions $\Rightarrow$ consistent and dependent
(same line)

NO solution $\Rightarrow$ inconsistent
(parallel lines)

EBA examples - pg 517-519

(12-1-b) $\begin{cases} 4x - y = 1 \\ x + y = 4 \end{cases}$ Check w/ graphs.

① $\begin{cases} 4x - 3y = 5 \\ 2x + 3y = 7 \end{cases}$

② $\begin{cases} 3x = 5y - 1 \\ 2x - 3y = 8 \end{cases}$

③ $\begin{cases} 3x - 4y = 1 \\ 6x - 8y = -5 \end{cases}$

④ $\begin{cases} 3x - 2y = 1 \\ 9x - 6y = 3 \end{cases}$

EBS examples - pg 520-521

① $\begin{cases} 4x + 3y = 14 \\ y = 3x - 4 \end{cases}$

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

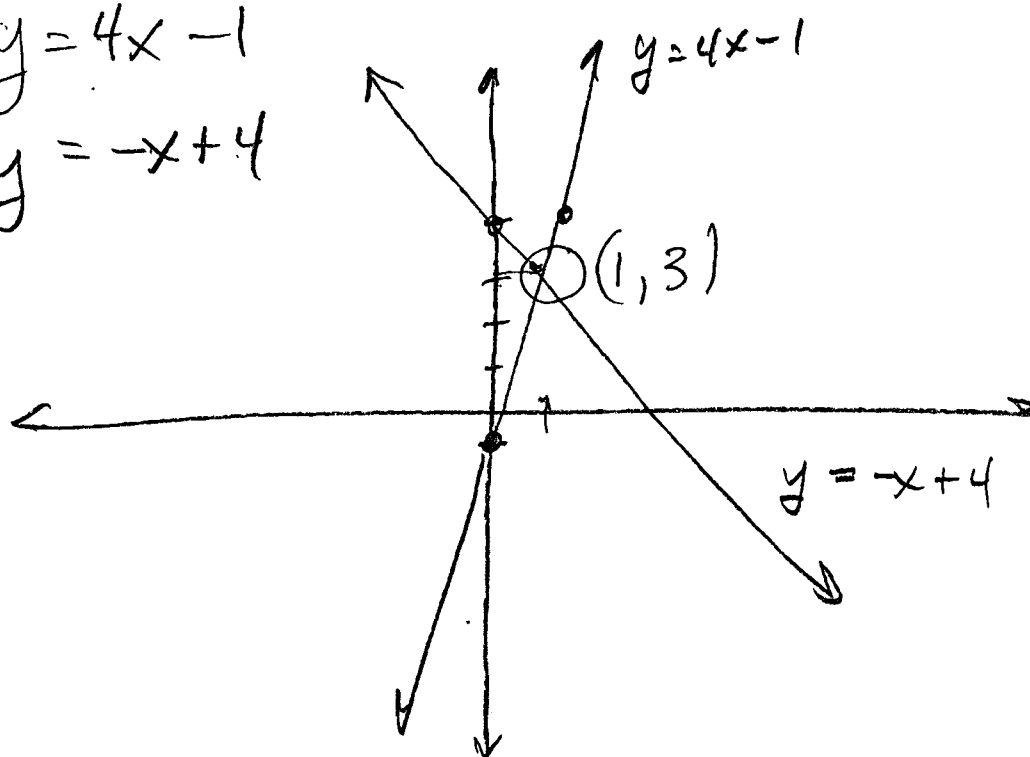
$$\textcircled{2-1-b} \begin{cases} 4x - y = 1 \\ \textcircled{x + y} = 4 \end{cases}$$

$$5x = 5$$

$$\textcircled{x = 1} \quad \textcircled{y = 3} \quad \boxed{(1, 3)}$$

$$y = 4x - 1$$

$$y = -x + 4$$



$$\textcircled{2} \begin{cases} 3x = 5y - 1 \\ 2x - 3y = 8 \end{cases}$$

$$3x - 5y = -1 \xrightarrow{(-2)} -6x + 10y = 2$$

$$2x - 3y = 8 \xrightarrow{(3)} 6x - 9y = 24$$

↑ ↑

$$\textcircled{y = 26}$$

$$3x = 5(26) - 1$$

$$3x = 130 - 1$$

$$3x = 129$$

$$\textcircled{x = 43}$$

$$\boxed{(43, 26)}$$

$$\begin{cases} 4x + 3y = 14 \\ y = 3x - 4 \end{cases}$$

$$4x + 3(3x - 4) = 14$$

$$4x + 9x - 12 = 14$$

$$13x = 26$$

$$x = 2 \quad y = 2$$

$$(2, 2)$$

$$\begin{cases} 3x - 2y = 1 & \xrightarrow{(-3)} -9x + 6y = -3 \\ 9x - 6y = 3 & \longrightarrow 9x - 6y = 3 \end{cases}$$

$$0 = 0 \checkmark$$

INFINITE NUMBER
OF (X, Y) PAIRS

SAME LINE