

Assigned Work: p.54 # 1, 4, 6odd, 11odd, 20*

Solving Linear Systems by Elimination Feb 11/2016

Ex.1 Solve: $x + y = 60$ ① $x - y = 8$ ②

$$\begin{array}{r}
 x - y = 8 \\
 \hline
 \text{stack equations} \\
 \text{look for same size coefficients} \\
 \text{①} + \text{②} \quad \text{①} - \text{②} \\
 \frac{2x}{2} + 0 = \frac{68}{2} \quad \frac{2y}{2} = \frac{52}{2} \\
 \boxed{x = 34} \quad \boxed{y = 26} \\
 y + (-y) = 0 \\
 y - (-y) = 2y
 \end{array}$$

normally, pick one of these paths, then sub our answer to find 2nd answer.

Feb 15 - 3:53 PM

Ex.2 Solve $5x + 2y = 5$ ① $3x - 4y = -23$ ②

$$\begin{array}{r}
 \text{match } x \text{ option 1} \quad \text{match } y \text{ option 2} \\
 \text{①} \times 3: 15x + 6y = 15 \quad \text{①} \times 2: 10x + 4y = 10 \\
 \text{②} \times 5: 15x - 20y = -115 \quad \text{②} : 3x - 4y = -23 \\
 \text{subtract} \quad \text{add} \quad \frac{13x}{13} = \frac{-13}{13}
 \end{array}$$

$$\boxed{x = -1}$$

Sub $x = -1$ into ①

$$5(-1) + 2y = 5$$

$$-5 + 2y = 5$$

$$2y = 10$$

$$\boxed{y = 5}$$

∴ solution is $(-1, 5)$

Feb 15 - 3:53 PM

Assigned Work:

p.54 # 1, 4, 6 odd, 11 odd, 20*

c
c
e
a

$$-4y + (4y) = 0$$

4(d)

$$9x - 4y = 10 \quad (1) \times 1 : 9x - 4y = 10$$

$$3x + 2y = 10 \quad (2) \times 2 : \underline{6x + 4y = 20}$$

$$\text{add } 15x = 30$$

$$(b) \quad 3x - 7y = 11 \quad (1) \times 5$$

$$5x + 8y = 9 \quad (2) \times 3$$

Feb 15 - 4:04 PM

$$6(c) \quad 4x - y = 5 \quad (1) \quad -5x + 2y = -1 \quad (2)$$

$$(1) \times 2 : \underline{8x - 2y = 10} \quad (3)$$

$$(2) + (3) : \frac{3x}{3} = \frac{9}{3}$$

$$\boxed{x = 3}$$

Sub $x = 3$ into (1) or (2) or (3)

$$(1) : 4(3) - y = 5$$

$$12 - y = 5$$

$$-y = 5 - 12$$

$$-y = -7$$

$$\boxed{y = 7}$$

 \therefore solution is $(3, 7)$

Feb 16-12:43 PM

11 a c e

$$(a) \quad 4x + 7y = 23 \quad (1) \quad 6x - 5y = -12 \quad (2)$$

$$(1) \times 3: 12x + 21y = 69 \quad (3)$$

$$(2) \times 2: 12x - 10y = -24 \quad (4)$$

$$(3) - (4) \quad \frac{31y}{31} = \frac{93}{31}$$

$$\boxed{y = 3}$$

sub $y = 3$ into (1) ~~(2)~~ ~~(3)~~ ~~(4)~~

$$4x + 7(3) = 23$$

$$4x + 21 = 23$$

$$4x = 2$$

$$x = \frac{2}{4}$$

$$x = \frac{1}{2}$$

$$\left(\frac{1}{2}, 3\right)$$

Feb 16-12:48 PM

11 d

$$0.5x - 0.3y = 1.5 \quad (1) \quad 0.2x - 0.1y = 0.7 \quad (2)$$

$$(1) \times 10: 5x - 3y = 15 \quad (3) \quad (2) \times 10: 2x - y = 7 \quad (4)$$

$$(4) \times 3: 6x - 3y = 21 \quad (5)$$

$$(3) - (5): -x = -6$$

$$\boxed{x = 6}$$

Feb 16-12:57 PM

11(a)

$$5x - 12y = 1 \quad (1) \quad 13x + 9y = 16 \quad (2)$$

$\text{LCM} = 36$

$$\begin{array}{r} (1) \times 3: 15x - 36y = 3 \\ (2) \times 4: 52x + 36y = 64 \\ \hline \text{add: } 67x = 67 \\ \boxed{x = 1} \end{array}$$

sub $x = 1$ into (2)

$$\begin{array}{r} 13(1) + 9y = 16 \\ 13 + 9y = 16 \\ -13 \quad -13 \\ \hline 9y = 3 \\ y = \frac{3}{9} \\ y = \frac{1}{3} \end{array}$$

\therefore Solution is $(1, \frac{1}{3})$

Feb 16-1:03 PM