

099 \$4.1 #5 13, 41-53, 55 de

$$\textcircled{13} \quad \begin{aligned} 2x - 5y &= 16 & E1 \\ 4x - 3y &= 11 & E2 \end{aligned}$$

$$\begin{array}{r} -2E1 \quad -4x + 10y = -32 \\ E2 \quad 4x - 3y = 11 \\ \hline 7y = -21 \end{array}$$

$$\boxed{y = -3}$$

$$2x - 5(-3) = 16$$

$$2x + 15 = 16$$

$$2x = 1$$

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

$$4\left(\frac{1}{2}\right) - 3(-3) = 11 \quad ?$$

$$2 + 9 = 11 \quad \checkmark$$

#541-54 Solve the system by any method.

$$\textcircled{41} \quad \begin{aligned} x - 3y &= 7 & E1 \\ 2x + y &= -6 & E2 \end{aligned}$$

$$E1 \quad x = 3y + 7$$

$$E2 \quad 2(3y + 7) + y = -6$$

$$6y + 14 + y = -6$$

$$7y = -20$$

$$\boxed{y = -\frac{20}{7}}$$

$$x - 3\left(-\frac{20}{7}\right) = 7$$

$$x + \frac{60}{7} = 7 = \frac{49}{7}$$

$$x = \frac{49 - 60}{7} = \boxed{-\frac{11}{7} = x}$$

099 § 4.1 #543-53, 55 dp

(43) $y = \frac{1}{2}x + \frac{1}{3}$ y is already solved for,
 $y = -\frac{1}{3}x + 2$ both equations

$$\frac{1}{2}x + \frac{1}{3} = -\frac{1}{3}x + 2$$

$$6\left(\frac{1}{2}x + \frac{1}{3}\right) = 6\left(-\frac{1}{3}x + 2\right)$$

$$3x + 2 = -2x + 12$$

$$5x = 10$$

$$\boxed{x = 2}$$

$$y = \frac{1}{2}(2) + \frac{1}{3}$$

$$= 1 + \frac{1}{3} = \frac{3}{3} + \frac{1}{3} = \frac{4}{3} = y$$

$$\boxed{\frac{4}{3} = y}$$

(45) $3x - 4y = 12$ "x done"

$$x = \frac{2}{3}y - 4$$

$$3\left(\frac{2}{3}y - 4\right) - 4y = 12$$

$$2y - 12 - 4y = 12$$

$$-2y = 24$$

$$\boxed{y = -12}$$

$$x = \frac{2}{3}(-12) - 4$$

$$= -8 - 4 = \boxed{-12 = x}$$

$$3(-12) - 4(-12) = 12?$$

$$-36 + 48 = 12 \checkmark$$

$$6\left(\frac{x}{2}\right) = 3x$$

$$6\left(\frac{1}{3}\right) = 2$$

$$6\left(-\frac{1}{3}\right) = -2$$

$$6(2) = 12$$

Improper Fractions
preferred.

099 § 4.1 #9 47-53, 55 de

$$\begin{aligned} \textcircled{47} \quad 4x - 3y &= -7 \quad E1 \\ -8x + 6y &= -11 \quad E2 \end{aligned}$$

$$2E1 \quad 8x - 6y = -14$$

$$E2 \quad -8x + 6y = -11$$

$$0 = -25 \quad \text{!D}$$

No Solution!

$$\begin{aligned} \textcircled{49} \quad 3y + z &= 17 \quad E1 \\ 5y + 20z &= 65 \quad E2 \end{aligned}$$

$$E1 \quad z = -3y + 17$$

$$E2 \quad 5y + 20(-3y + 17) = 65$$

$$5y - 60y + 340 = 65$$

$$-55y = -275$$

$$y = \frac{275}{55} = \frac{55}{11} = \boxed{5 = y}$$

$$3(5) + z = 17$$

$$15 + z = 17$$

$$\boxed{z = 2}$$

$$5(5) + 20(2) = 65$$

$$25 + 40 = 65 \quad \checkmark$$

099 $\int 4, 1 \neq 5, 51, 53, 55$ etc

$$\textcircled{E1} \quad \frac{3}{4}x - \frac{1}{3}y = 1 \quad E1 \quad LCD = 12$$

$$y = \frac{1}{4}x \quad E2 \quad LCD = 4$$

$$12 E1 \quad (12)\left(\frac{3}{4}\right)x - 12\left(\frac{1}{3}y\right) = 12(1)$$

$$(3)(3x) - 4(y) = 12$$

$$\textcircled{E1} \quad 9x - 4y = 12 \quad \textcircled{E1}$$

$\textcircled{E2}$ says $y = \frac{1}{4}x$. SEND THIS TO $E1$:

$$E1 \quad 9x - 4\left(\frac{1}{4}x\right) = 12$$

$$9x - x = 12$$

$$8x = 12$$

$$x = \frac{12}{8} = \frac{3}{2} = x$$

$$E2 \quad y = \frac{1}{4}x$$

$$y = \frac{1}{4}\left(\frac{3}{2}\right) = \frac{3}{8} = y$$

$$\textcircled{E1} \quad \frac{3}{4}\left(\frac{3}{2}\right) - \frac{1}{3}\left(\frac{3}{8}\right) = 1?$$

$$\frac{9}{8} - \frac{1}{8} = \frac{8}{8} = 1 \quad \checkmark$$

099 § 41 ~~45~~ 53, 55 do

$$\textcircled{53} \quad \frac{1}{4}x - \frac{1}{2}y = \frac{1}{3} \quad E1 \quad \text{LCD: } 2 \cdot 2 \cdot 3$$

$$\frac{1}{3}x - \frac{1}{4}y = -\frac{2}{3} \quad E2 \quad \text{LCD: } 2 \cdot 2 \cdot 3$$

$$12 E1: \quad 12\left(\frac{1}{4}x\right) - 12\left(\frac{1}{2}y\right) = 12\left(\frac{1}{3}\right)$$

$$\boxed{3x - 6y = 4 \quad E1}$$

$$12 E2 \quad 12\left(\frac{1}{3}x\right) - 12\left(\frac{1}{4}y\right) = 12\left(-\frac{2}{3}\right)$$

$$\boxed{4x - 3y = -8 \quad E2}$$

$$\boxed{M1} \quad 3x = 6y + 4 \quad E1$$

$$x = 2y + \frac{4}{3} \quad \text{send to } E2 \text{ :}$$

$$4\left(2y + \frac{4}{3}\right) - 3y = -8$$

$$8y + \frac{16}{3} - 3y = -8$$

$$5y = -8 - \frac{16}{3} = -\frac{24}{3} - \frac{16}{3} = -\frac{40}{3}$$

$$y = \frac{-\frac{40}{3}}{5} = \frac{-\frac{40}{3} \cdot \frac{1}{5}}{1} = \frac{-\frac{40}{3} \cdot \frac{1}{5}}{1} = \boxed{-\frac{8}{3} = y}$$

$$x = 2\left(-\frac{8}{3}\right) + \frac{4}{3} = \frac{-16 + 4}{3} = \frac{-12}{3} = \boxed{-4 = x}$$

SUBSTITUTION
METHOD.

099 § 4.1 # 53, 55 de

53

M2

$$3x - 6y = 4 \quad E1$$

$$4x - 3y = -8 \quad E2$$

ADDITION
METHOD

$$-4E1 \quad -12x + 24y = -16$$

$$3E2 \quad 12x - 9y = -24$$

$$15y = -40$$

$$y = -\frac{40}{15} = \boxed{-\frac{8}{3} = y}$$

$$E1 : 3x - 6\left(-\frac{8}{3}\right) = 4$$

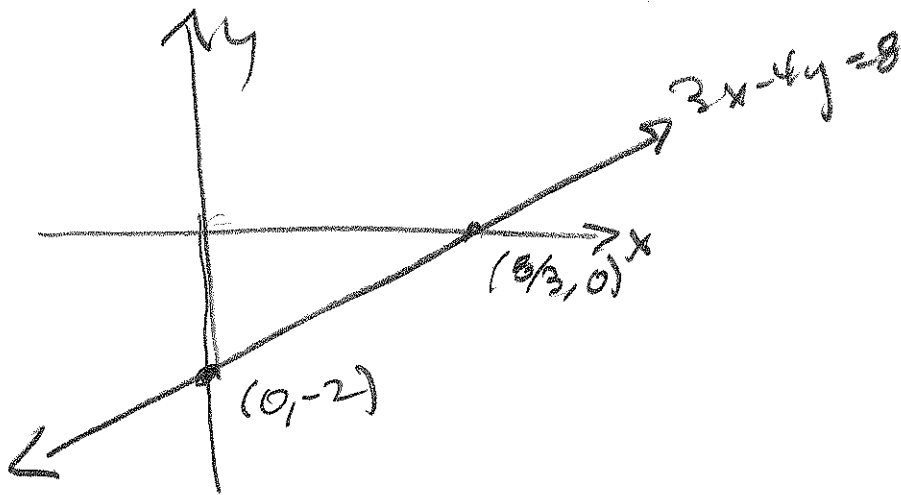
$$3x + 16 = 4$$

$$3x = -12$$

$$\boxed{x = -4}$$

099 §4.1 #55 de

(55) d) Graph $3x - 4y = 8$



x	y
0	-2
$\frac{8}{3}$	0

e) Find where this line meets $x - y = 2$.

$x = y + 2$. Sub into $3x - 4y = 8$:

$$3(y + 2) - 4y = 8$$

$$3y + 6 - 4y = 8$$

$$-y = 2$$

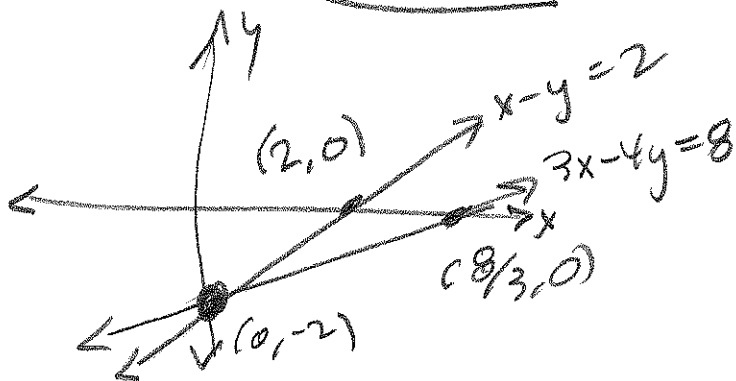
$$y = -2$$

$$x - y = 2$$

$$x + 2 = 2$$

$$x = 0$$

Dang! Graph would've done it, easily!



x	y
0	-2
+2	0