

HW 11

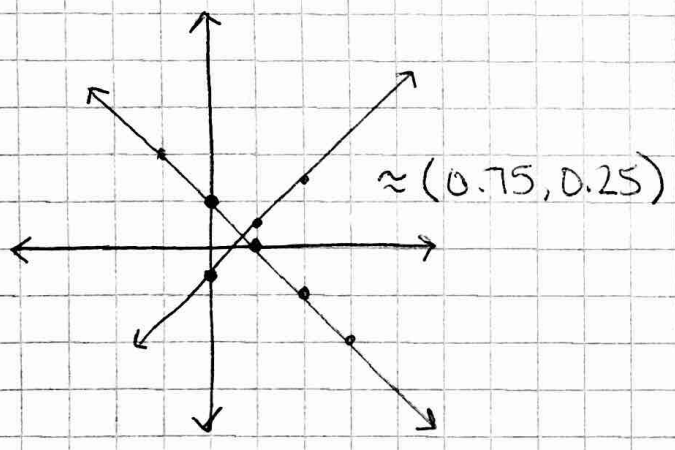
1. $r - s = 20$
 $s = r - 20$

2. $5x - 8y = -10$
 $5x = 8y - 10$
 $x = \frac{8}{5}y - 2$

3. $0.2m - 0.5n = 1$
 $-0.5n = 1 - 0.2m$
 $n = -0.5 + 0.4m$

4. $200x + 400y = -50$
 $400y = -200x - 50$
 $y = -\frac{1}{2}x - \frac{1}{8}$

5. $x + y = 1 \rightarrow y = -x + 1$
 $2x - 2y = 1 \rightarrow y = x - \frac{1}{2}$



$(x + y = 1) \cdot 2$
 $2x - 2y = 1$

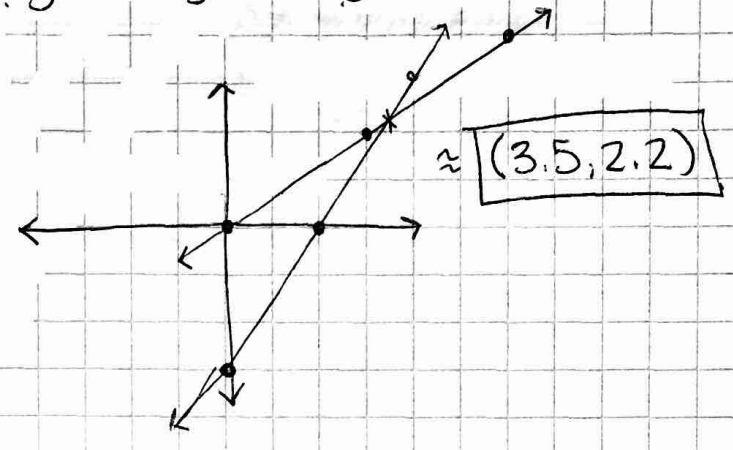
$+ 2x + 2y = 2$
 $2x - 2y = 1$

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

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

$(\frac{3}{4}, \frac{1}{4})$

6. $3x - 2y = 6 \rightarrow -2y = -3x + 6 \rightarrow y = \frac{3}{2}x - 3$
 $-2x + 3y = 0 \rightarrow 3y = 2x \rightarrow y = \frac{2}{3}x$



$(3x - 2y = 6) \cdot 2$
 $(-2x + 3y = 0) \cdot 3$

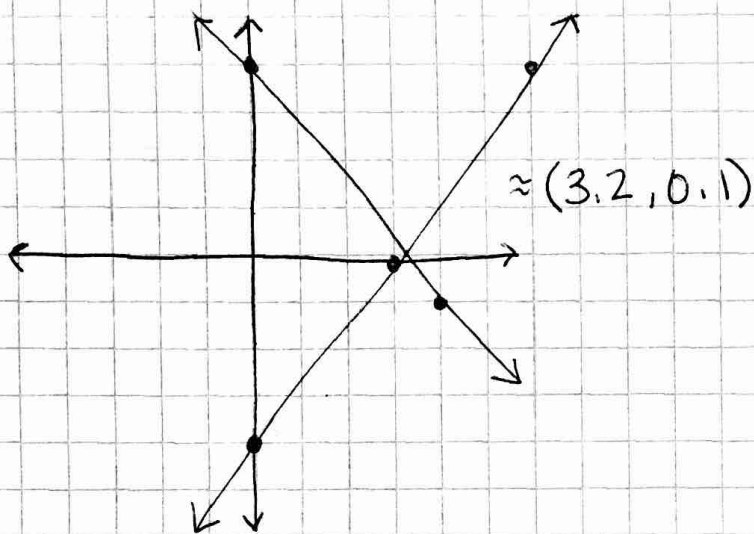
$6x - 4y = 12$
 $-6x + 9y = 0$

 $5y = 12$
 $y = \frac{12}{5} = 2.4$

$3x - 2(2.4) = 6$
 $3x - 4.8 = 6$
 $3x = 10.8$
 $x = 3.6$

$(3.6, 2.4)$

7. $5x + 4y = 16 \rightarrow 4y = -5x + 16 \rightarrow y = -5/4x + 4$
 $4x - 3y = 12 \rightarrow y = 4/3x - 4$



$$\begin{array}{r} (5x + 4y = 16) \cdot 3 \\ (4x - 3y = 12) \cdot 4 \\ + 15x + 12y = 48 \\ 16x - 12y = 48 \\ \hline 31x = 96 \\ x = 3.0968 \approx 3.1 \end{array}$$

$$\begin{array}{l} 5(3.1) + 4y = 16 \\ 15.5 + 4y = 16 \\ 4y = 0.5 \\ y = 0.1 \end{array}$$

$(3.1, 0.1)$

8. $3x - 4y = 8$
 $y = x - 1$

$$\begin{array}{l} 3x - 4(x - 1) = 8 \\ 3x - 4x + 4 = 8 \\ -x + 4 = 8 \\ -x = 4 \\ x = 4 \end{array}$$

$$y = 4 - 1 = 3$$

$(4, 3)$

9. $(5x - 8y = 8) \cdot 2$
 $-10x + 4y = -7$

$$\begin{array}{r} + 10x - 16y = 16 \\ -10x + 4y = -7 \\ \hline -12y = 9 \\ y = -3/4 \end{array}$$

$$\begin{array}{l} 5(5x - 8(-3/4)) = 8 \\ 5x + 6 = 8 \\ 5x = 2 \\ x = 2/5 \end{array}$$

$(2/5, -3/4)$

10. $(\frac{1}{2}x + \frac{3}{2}y = 5) \cdot -2$
 $x + y = -10$

$$\begin{array}{r} -x - 3y = -10 \\ + x + y = -10 \\ \hline -2y = -20 \\ y = 10 \end{array}$$

$$\begin{array}{l} x + 10 = -10 \\ x = -20 \end{array}$$

$(-20, 10)$

$$11. \quad y+3 = 2(x+4)-5$$

$$y+3 = 2x+8-5$$

$$y = 2x$$

$$y+1 = -4(x-3)-2$$

$$y+1 = -4x+12-2$$

$$y = -4x+9$$

$$2x = -4x+9$$

$$6x = 9$$

$$x = 3/2$$

$$y = 2(3/2) = 3$$

$$\boxed{(3/2, 3)}$$

$$12. \quad x+y+z = -6$$

$$-2x-y+z = -2$$

$$x-2y-z = 1$$

$$+ \begin{array}{r} x+y+z = -6 \\ -2x-y+z = -2 \\ \hline -x+2z = -8 \end{array} \quad \begin{array}{r} (-2x-y+z = -2) \cdot -2 \\ x-2y-z = 1 \end{array}$$

$$\begin{array}{r} (-x+2z = -8) \cdot 5 \\ 5x-3z = 5 \end{array} \quad \begin{array}{r} +4x+2y-2z = 4 \\ x-2y-z = 1 \\ \hline 5x-3z = 5 \end{array}$$

$$+ \begin{array}{r} -5x+10z = -40 \\ \cancel{5x} - 3z = 5 \\ \hline 7z = -35 \end{array}$$

$$z = -5$$

$$-x+2(-5) = -8$$

$$-x-10 = -8$$

$$-x = 2$$

$$x = -2$$

$$x-2y-z = 1$$

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

$$-2y+3 = 1$$

$$-2y = -2$$

$$y = 1$$

$$\boxed{(-2, 1, -5)}$$