

work for ICP 8-24-15

#3) we know $(x, y) = (-3, 8)$ ← given point
we want Parallel line

So we use $m = \frac{2}{3}$

Slope Intercept Method

$$y = mx + b$$

$$\downarrow \quad \downarrow$$

$$8 = \frac{2}{3}(-3) + b$$

$$8 = -2 + b$$

$$8 + 2 = -2 + b$$

$$10 = b$$

line that is parallel to

$y = \frac{2}{3}x - 6$ through $(-3, 8)$

$$y = \frac{2}{3}x + 10$$

#4) We know $(x, y) = (-3, 8)$
we want \perp line so
we use $m_{\perp} = -\frac{3}{m}$

Slope Intercept Method

$$y = mx + b$$

↓

$$8 = -\frac{3}{2}(-3) + b$$

$$8 = \frac{9}{2} + b$$

$$8 = 4.5 + b$$

$$\begin{array}{r} -4.5 \\ -4.5 \end{array}$$

$$\boxed{3.5 = b}$$

$$\begin{array}{l} y = -1.5x + 3.5 \\ y = -\frac{3}{2}x + \frac{7}{2} \\ y = -1\frac{1}{2}x + 3\frac{1}{2} \end{array}$$

So the line perpendicular
to $y = \frac{2}{3}x - b$ through $(-3, 8)$ is

$$\boxed{y = -\frac{3}{2}x + \frac{7}{2} \text{ or } y = -1.5x + 3.5}$$

7) ICP 8-24-05

Given $m = -\frac{5}{4}$ $(x, y) = (-4, -9)$

want: parallel line through
 $(-4, -9)$

Slope Intercept Form

$$y = mx + b$$

$$-9 = -\frac{5}{4}(-4) + b$$

$$-9 = 5 + b$$

$$\begin{array}{r} -9 = 5 + b \\ -5 \quad -5 \end{array}$$

$$\boxed{-14 = b}$$

$$\boxed{y = -\frac{5}{4}x - 14}$$

this \uparrow is the parallel line through
 $(-4, -9)$

#8 from ±CP 8/2/15

Given $m = -\frac{4}{5}$ $m_{\perp} = +\frac{5}{4}$

$(x, y) = (-4, -9)$

Want Perpendicular line through
 $(-4, -9)$

Slope Intercept Form

$$y = mx + b$$

$$-9 = \frac{4}{5}(-4) + b$$

$$-9 = -\frac{16}{5} + b$$

$$-9 = -\frac{16}{5} + b$$

$$+\frac{16}{5} \quad +\frac{16}{5}$$

$$-\frac{29}{5} = b \rightarrow y = \frac{5}{4}x - \frac{29}{5}$$

$$y = \frac{5}{4}x - \frac{29}{5}$$

$$y = 0.8x - 5.8$$

#9 $y = mx + b \rightarrow y = \frac{3}{7}x + 14$
 $m = \frac{3}{7} \quad m_{||} = \frac{3}{7} \quad (x, y) = (-8, 16)$

want parallel line through $(-8, 16)$

Slope Intercept Form

$$y = mx + b$$

$$16 = \frac{3}{7}(-8) + b$$

$$16 = -\frac{24}{7} + b$$

$$16 = -\frac{24}{7} + b$$

$$+\frac{24}{7}$$

$$+\frac{24}{7}$$

$$\frac{136}{7} = 19\frac{3}{7} = b$$

$$y = \frac{3}{7}x + 19\frac{3}{7}$$

$$y = \frac{3}{7}x + \frac{136}{7}$$

This is the line
parallel to
 $y = \frac{3}{7}x + 14$
through $(-8, 16)$

10) Given $y = -7x - 8$
 $m_{\perp} = \frac{1}{7}$ $m = -7$ $b = -8$
 $(x, y) = (4, -11)$

We want \perp line through $(-4, -11)$

Slope Intercept Form

$$y = mx + b$$

$$-11 = \frac{1}{7}(4) + b$$

$$-11 = \frac{4}{7} + b$$

$$-11 - \frac{4}{7} = \frac{4}{7} + b - \frac{4}{7}$$

$$-11\frac{4}{7} = b$$

$$y = \frac{1}{7}x - \frac{81}{7}$$

→ this line is
perpendicular to
 $y = -7x - 8$
through $(-4, -11)$