June 13th Find the equation of the line: $y=mx+b$

(35) same x intercept as $8x+3y-24=0$

and same y intercept as $14x+11y+99=0$

Step 1: to find the x-intercept, $y=0$

$8x+3y-24=0$

$8x+3(0)-24=0$

$8x-24=0$

$8x=24$

$x=3$

$\therefore$ the x-intercept is $(3,0)$

Step 2 to find the y-intercept, $x = 0$

$$14x + 11y + 99 = 0$$
$$-99 \quad -99$$
$$14(0) + 11y + 99 = 0 - 99$$
$$11y = -99$$
$$\frac{11y}{11} = \frac{-99}{11}$$
$$y = -9$$

$\therefore$ the y-intercept is $(0, -9)$

Find the slope $(3, 0)$ $(0, -9)$

$$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-9-0}{0-3} = \frac{-9}{-3} = 3$$

Find b - the y intercept

$y = mx + b$

$0 = 3(3) + b$

$0 = 9 + b$

$\boxed{b = -9}$

$\therefore y = mx + b$

$y = 3x - 9$

$0 = 3x - y - 9$

is the standard form equation

36. Find the ~~equation~~ $y=mx+b$ of the line perpendicular to $10x-3y+12=0$ and has the same y-intercept as $m=-\frac{1}{2}$ and thru $(-4,1)$

Find the slope

$10x-3y+12=0$

$-10x \quad -10x$

$-3y+12=-10x$

$-12 \quad -12$

$\frac{-3y}{-3}=\frac{-10x}{-3}+\frac{-12}{-3}$

$y=\frac{10}{3}x+4$ $\therefore m=\frac{10}{3}$

$m_{\perp}=-\frac{3}{10}$

Find b

$y=mx+b$

$1=-\frac{1}{2}(-4)+b$

$1=2+b$

$-2 \quad -2$

$b=-1$

$\therefore$ the equation

$y=-\frac{3}{10}x-1$