2.5 # 5:

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

$y-3=-2x+2$

$y=-2x+2+3$

$y=-2x+5$

OR

$2x+y=5$

7.

$y-4=\frac{-3}{2}(x-(-5))$

$y-4=\frac{-3}{2}(x+5)$

$y-4=\frac{-3x}{2}-\frac{15}{2}$

$y=\frac{-3x}{2}-\frac{15}{2}+\frac{8}{2}$

$y=\frac{-3x}{2}-\frac{7}{2}$

OR

$\frac{3x}{2}+y=-\frac{7}{2}$

OR

$\frac{\cancel{2}}{1}\cdot\frac{3x}{\cancel{2}}+\frac{2}{1}\cdot y=-\frac{7}{\cancel{2}}\cdot\frac{\cancel{2}}{1}$

$3x+2y=-7$

9. Undefined slope means a vertical line.
In a vertical line, all of the x-coordinates are the same, so all of the x-coordinates are -8.
The equation is:

$x=-8$

(this is equation is in general form, and can't be written in slope-intercept form)

11.

$y-(-8)=0(x-5)$

$y+8=0$

$y=-8$

15.

x-intercept 3 is the point (3,0)
y-intercept -2 is the point (0,-2)

$m=\frac{0-(-2)}{3-0}=\frac{2}{3}$

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

(using slope-intercept form)
Alternate forms for the answer are:

$y-(-2)=\frac{2}{3}(x-0)$

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

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

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

$2x+3y=-6$

17. Vertical lines all have the same x-coordinate. To go through point (-6,4) they must all have x-coordinate -6, so the equation is $x=-6$

19. Horizontal lines all have the same y-coordinate. To go through the point (-7,4), they must all have y-coordinate 4, so the line equation is $y=4$

Horizontal lines have a slope of 0, so you can also find the equation by doing

$y-4=0(x-(-7))$

$y-4=0$

$y=4$

39. The line has y-intercept 1. You can see that if you go over to the right 1, the line goes down by 2, so the slope is -2:

$$y=-2x+1$$

41. This line has y-intercept 2. It's hard to see how much the line goes down when you go to the right by 1, but if you go to the right by 3, then the line goes down 1, so

$$m=\frac{rise}{run}=\frac{-1}{3}$$

You could also find the slope from the two points (0,2) and (3,1)

The equation of the line is

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

45. The line $x+3y=5$ can be put in the form:

$$\frac{3y}{3}=\frac{-x}{3}+\frac{5}{3}$$

$$y=\frac{-1}{3}x+\frac{5}{3}$$

So its slope is $\frac{-1}{3}$

A parallel line will have the same slope, so the parallel line equation is

$$y-4=\frac{-1}{3}(x-(-1))$$

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

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

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

$$y=\frac{-1}{3}x-\frac{1}{3}+\frac{12}{3}$$

$$y=\frac{-1}{3}x+\frac{11}{3}$$

OR

$$\frac{-1}{3}x+y=\frac{11}{3}$$

$$\frac{\cancel{3}}{1}\cdot\frac{-1}{\cancel{3}}x+\frac{3}{1}\cdot y=\frac{\cancel{3}}{1}\cdot\frac{11}{\cancel{3}}$$

$$-x+3y=11$$

47., The line $3x+5y=1$ can be put in the form:

$$5y=-3x+1$$

$$\frac{\cancel{5}y}{\cancel{5}}=\frac{-3x}{5}+\frac{1}{5}$$

$$y=\frac{-3x}{5}+\frac{1}{5}$$

So its slope is $\frac{-3}{5}$

If we change the sign and take the reciprocal we get a slope of $\frac{5}{3}$, which is the slope of the perpendicular line:

$$y-6=\frac{5}{3}(x-1)$$

$$y-6=\frac{5}{3}x-\frac{5}{3}$$

$$y=\frac{5}{3}x-\frac{5}{3}+6$$

$$y=\frac{5}{3}x-\frac{5}{3}+\frac{18}{3}$$

$$y=\frac{5}{3}x+\frac{13}{3}$$

OR

$$\frac{-5}{3}x+y=\frac{13}{3}$$

$$\frac{\cancel{3}}{1}\cdot\frac{-5}{\cancel{3}}x+\frac{3}{1}\cdot y=\frac{\cancel{3}}{1}\cdot\frac{13}{\cancel{3}}$$

$$-5x+3y=13$$