

Section 8.6

June 11

pg. 437
#32. Find the equation of the line parallel to $2x - 3y + 1 = 0$ through $(1, 2)$

Step 1: Find the Slope

$$2x - 3y + 1 = 0$$

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

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

$$\therefore m = \frac{2}{3}$$

$m = \frac{2}{3}$

Step 2: Find the y-intercept $\begin{pmatrix} x & y \\ 1 & 2 \end{pmatrix}$

$$m = \frac{2}{3}$$

$$y = mx + b$$

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

$$\frac{6}{3} - \frac{2}{3} = b$$

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

$$\therefore y = \frac{2}{3}x + \frac{4}{3}$$

$$3y = 2x + 4$$

$0 = 2x - 3y + 4$
is the standard form.

33. Find the equation of the line perpendicular to $x - 5y + 2 = 0$ thru $(-2, 5)$

(1) Step 1 find the slope.

$$x - 5y + 2 = 0 + 5y$$

$$\frac{x}{5} + \frac{2}{5} = \frac{5y}{5}$$

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

$$\therefore m = \frac{1}{5}$$

$$m_{\perp} = -5$$

② Find the y-intercept

thru $(-2, 5)$

$$m_{\perp} = -5$$

$$y = mx + b$$

$$5 = (-5)(-2) + b$$

$$5 = 10 + b$$

$$-5 = b$$

$\therefore$ the y-intercept is -5

③ Step 3 Equation

$$y = -5x - 5$$

$$5x + y + 5 = 0$$

standard form

36. Find the equation ^{$y = mx + b$} of the line parallel to $x + 9y - 2 = 0$ and having the same x -intercept as the line $2x - 9y + 27 = 0$

Step 1: find the slope

$$x + 9y - 2 = 0 \quad -x + 2$$

$$\frac{9y}{9} = -\frac{x}{9} + \frac{2}{9}$$

$$y = -\frac{x}{9} + \frac{2}{9}$$

$$\therefore m = -\frac{1}{9}$$

$m // = -\frac{1}{9}$

Step 2: ^{to} find the x -intercept, $y=0$

$$2x - 9y + 27 = 0$$

$$2x - \cancel{9(0)} + \overset{-27}{27} = 0 \quad -27$$

$$\frac{2x}{2} = \frac{-27}{2}$$

$$x = \frac{-27}{2}$$

$\therefore$ the x -intercept is $\left(\frac{-27}{2}, 0\right)$

Step 3 find the y-intercept $m = -\frac{1}{9}$
thru $\left(-\frac{27}{2}, 0\right)$

$$y = mx + b$$

$$0 = \left(-\frac{1}{9}\right)\left(-\frac{27}{2}\right) + b$$

$$0 = \frac{27}{18} + b$$

$$0 = \frac{3}{2} + b$$

$$b = -\frac{3}{2}$$

therefore the
y-intercept is
 $-\frac{3}{2}$

Step 4 The equation is

$$18y = -\frac{1}{9}x - \frac{3}{2} \times 9$$

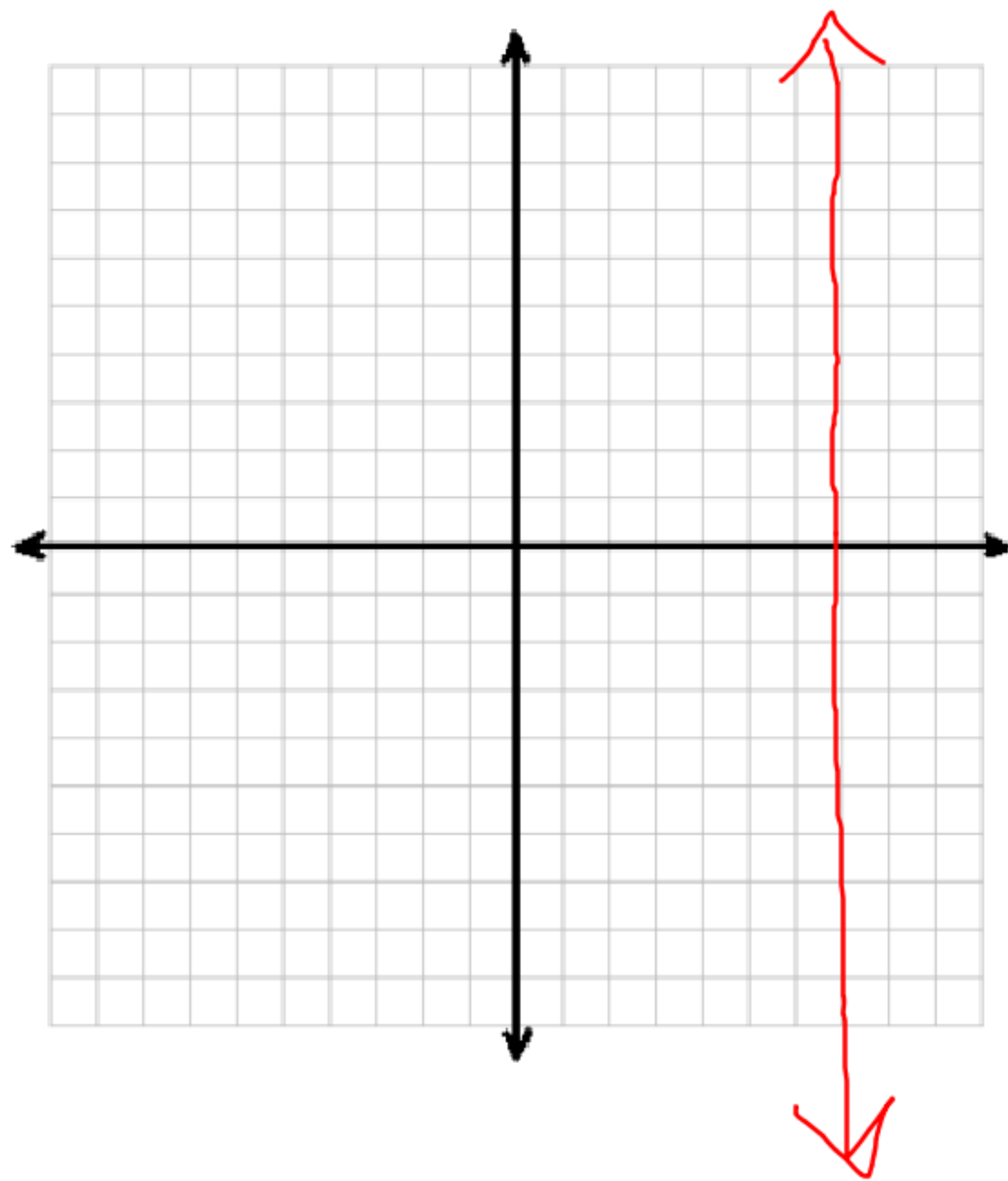
1×18 $\times 2$ $\times 9$
 $+2x$ $+27$ $+2x$ $+27$

$$18y = -2x - 27$$

$2x + 18y + 27 = 0$ is the
Standard form.

29. the equation of the line
thru $(-3, 5)$ parallel to
 $6x + 5y - 12 = 0$

30. parallel to $5x + 3y + 12 = 0$
and has the same y-intercept
as $y = -\frac{1}{2}x + 5$



Homework

Hand-out # 31-38