MATH 195

§1.10 LINES

JOHN ADAMSKI

6/16/2016

9, 19, 23, 25, 29, 35, 37
43, 47, 61, 63, 64, 67

9. $P(-1, 2)$, $Q(0, 0)$
$x_2\ y_2$ $x_1\ y_1$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - 0}{-1 - 0} = \frac{2}{-1} = \boxed{-2}$$

19. y-INT = 4

SLOPE = -1

$$\boxed{y = -x + 4}$$

YOU CAN COMPUTE THIS USING ANY 2 PTS ON THE LINE.

23. $\boxed{y = 3x - 2}$ (SLOPE - INT. FORM: $y = mx + b$)

25. PNT-SLOPE FORM: $y - y_1 = m(x - x_1)$

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

29. $$m = \frac{6 - 1}{1 - 2} = \frac{5}{-1} = -5$$

WE CAN USE PNT-SLOPE FORM WITH EITHER POINT:

$$\left.\begin{array}{l} \boxed{y - 1 = -5(x - 2)} \\ \text{OR} \\ \boxed{y - 6 = -5(x - 1)} \end{array}\right\} \text{OR} \quad \boxed{y = -5x + 11}$$

ALL THREE ARE EQUIVALENT

35. HORIZONTAL LINE : $\boxed{y = 3}$

37. VERTICAL LINE: $\boxed{x = 2}$

43. $x + 2y = 6$

$2y = -x + 6$

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

PNT-SLOPE FORM: $y + 6 = -\frac{1}{2}(x - 1)$, OR

SLOPE-INT FORM: $y = -\frac{1}{2}x - \frac{11}{2}$

47. $\perp$ TO $2x + 5y + 8 = 0$

$y = -\frac{2}{5}x - \frac{8}{5} \leftarrow$ SLOPE $= -\frac{2}{5}$

$\therefore \perp$ SLOPE $= \frac{5}{2}$

PNT-SLOPE FORM: $y + 2 = \frac{5}{2}(x + 1)$, OR

SLOPE-INT. FORM: $y = \frac{5}{2}x + \frac{1}{2}$

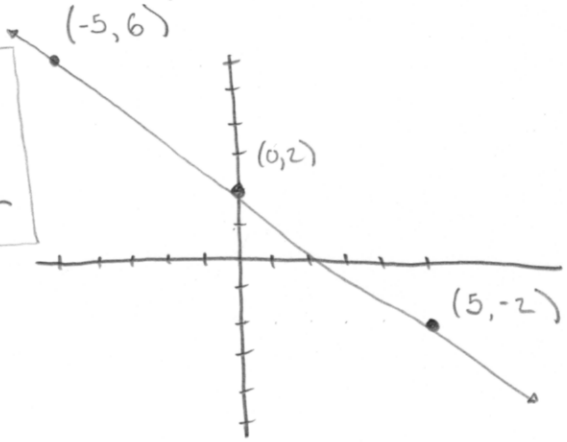
61. $4x + 5y = 10$

$5y = -4x + 10$

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

$m = -\frac{4}{5}$

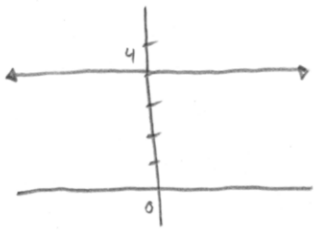
y-INT $= 2$



63. $y = 4$

SLOPE = 0

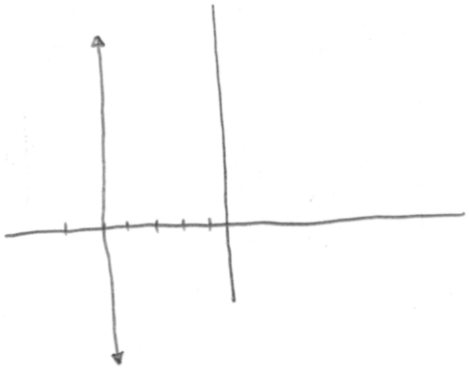
y-INT = 4



64. $x = -5$

SLOPE UNDEFINED

y-INT : NONE



67. $5x + 2y - 10 = 0$

x-INT: SET $y = 0$, SOLVE FOR x:

$5x + 2(0) - 10 = 0$

$5x - 10 = 0$

$5x = 10$

$x = 2$

y-INT: SET $x = 0$, SOLVE FOR y:

$5(0) + 2y - 10 = 0$

$2y = 10$

$y = 5$