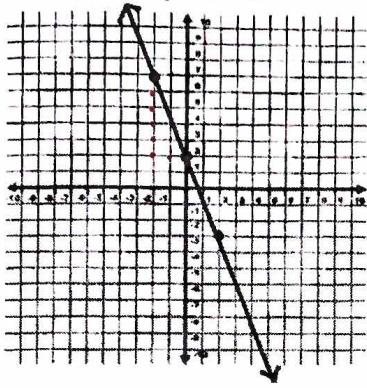


# AA PREP: LINEAR RELATIONSHIPS—WRITING LINEAR EQUATIONS LECTURE

1. Write an equation for the line graphed below in slope-intercept form.



$$y = mx + b$$

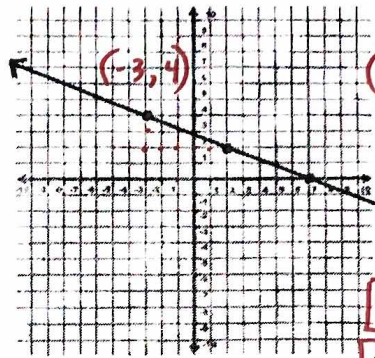
$$y - y_1 = m(x - x_1)$$

$$y - 11 = (0, 2)$$

$$m = -\frac{5}{2}$$

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

2. Write an equation for the line graphed below in slope-intercept form.



$$y - y_1 = m(x - x_1)$$

$$(x_1, y_1) = (-3, 4)$$

$$m = -\frac{2}{5}$$

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

$$y - 4 = -\frac{2}{5}x - \frac{6}{5}$$

$$+4 \qquad +4(\frac{5}{5}) = \frac{20}{5}$$

$$y = -\frac{2}{5}x + \frac{14}{5}$$

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

3. Write an equation in slope-intercept form for a line with slope  $-\frac{4}{3}$  that contains the point  $(-3, 12)$ .

$$y - y_1 = m(x - x_1) \rightarrow y = mx + b$$

$$y - 12 = -\frac{4}{3}(x + 3)$$

$$y - 12 = -\frac{4}{3}x - 4$$

$$+12 \qquad +12$$

$$y = -\frac{4}{3}x + 8$$

4. Write an equation in slope-intercept form for a line containing  $(-7, 1)$  and  $(-3, -5)$ .

FIND SLOPE IS 1!

$$\frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - 1}{-3 - (-7)} = \frac{-6}{4} = -\frac{3}{2}$$

$$y - 1 = -\frac{3}{2}(x + 7)$$

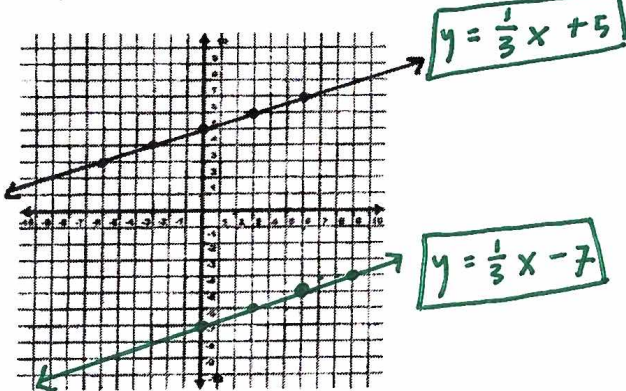
$$y - 1 = -\frac{3}{2}x - \frac{21}{2}$$

$$+1 \qquad +1(\frac{2}{2}) = \frac{2}{2}$$

$$y = -\frac{3}{2}x - \frac{19}{2}$$

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

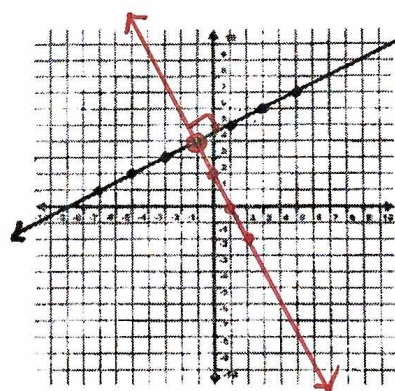
5. Draw a line parallel to the one provided, passing through  $(6, -5)$ . Write each equation in slope-intercept form.  $\parallel$ : SAME SLOPE



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

$$y = \frac{1}{3}x - 7$$

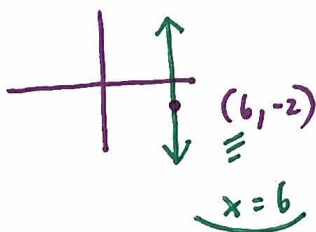
6. Draw a line perpendicular to the one provided, passing through  $(-1, 4)$ . Write each equation in slope-intercept form.  $\perp$ : SLOPES OPPOSITE RECIPROCAL



$$y = \frac{1}{2}x + 4\frac{1}{2}$$

$$y = -2x + 2$$

7. Write the equation of a line with an undefined slope that contains  $(6, -2)$ .



VERTICAL LINE:  $\frac{\#}{0} = \text{undefined}$

$$x = \#$$

$$x = 6$$

8. Write an equation in slope-intercept form for the line containing  $(-8, 4)$  and perpendicular to:  $y = -2x + 9$

$\perp$ : SLOPES OPPOSITE RECIPROCAL

$$m = \frac{1}{2}$$

$$y - 4 = \frac{1}{2}(x + 8)$$

$$y - 4 = \frac{1}{2}x + 4$$

$$+4 \qquad +4$$

$$y = \frac{1}{2}x + 8$$