Algebra II
3-1
Slope

Slope - $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{rise}{run} = \frac{change\ in\ y}{change\ in\ x} = \frac{\Delta y}{\Delta x}$

Positive Slope - uphill left to right

Negative Slope - downhill left to right

Zero Slope - y= line, horizontal

No Slope - x= line, vertical

Slope/Intercept form of a Line - $y = mx + b$

↳ slope → y-intercept

a) starting point

b) point where the line crosses y-axis.

Find the slope of the line passing through the pair of points.

1) (3,-2), (1,6)

$m = \frac{6-(-2)}{1-3} = \frac{8}{-2} = \boxed{-4}$

Parallel Lines - same slope, different y-int (b)

Perpendicular Lines - opposite/reciprocal slopes.

Determine if the lines L_1 and L_2 passing through the pairs of points are parallel, perpendicular, or neither.

25) L_1: (3, 6), (-6, 0)
L_2: (0, -1), (5, $\frac{7}{3}$)

$L_1 \rightarrow m = \frac{6-0}{3-(-6)} = \frac{6}{9} = \boxed{\frac{2}{3}}$ parallel !

$L_2 \rightarrow m = \frac{\frac{7}{3}-(-1)}{5-0} = \frac{\frac{10}{3}}{\frac{5}{1}} = \frac{10}{3} \cdot \frac{1}{5} = \boxed{\frac{2}{3}}$

Find the slope and the *y*-intercept of the equation of the line.

35) $5x - y + 3 = 0$

$5x + 3 = y$

$\boxed{\begin{array}{c} m = 5 \\ b = 3 \end{array}}$

45) (-8,1), (-8,7)

$m = \frac{7-1}{-8-(-8)} = \frac{6}{0}$ no slope

eqn: $x = -8$ no y-int

Write equations of the line through the given point a) parallel to and b) perpendicular to the given line.

67) (-6, 4), $3x + 4y = 7$

$\frac{4y}{4} = \frac{-3x}{4} + \frac{7}{4}$

$\boxed{m = -\frac{3}{4}}$

$y = -\frac{3}{4}x - \frac{1}{2}$

∥ $m = -\frac{3}{4}$ | ⊥ $m = \frac{4}{3}$

$y = mx + b$ | $y = \frac{4}{3}x + b$
$y = -\frac{3}{4}x + b$ | $4 = \frac{9}{3}(-6) + b$
$4 = -\frac{3}{4}(-6) + b$ | $4 = -8 + b$
$4 = \frac{9}{2} + b$ | $12 = b$
$\boxed{-\frac{1}{2} = b}$ | $\boxed{y = \frac{4}{3}x + 12}$

Assignment:

Pg. 128
12-16 even,
24-26 even,
31-34 all,
36-70 even

Note: 60-64, use same
instructions as 50 to 58.

NoNlkasd;l