Name: KEY

Section 3.1b – Parallel and Perpendicular Lines

Determine if the following lines are Parallel, Perpendicular, or neither.

$y = 3x + 5$ and $2x - 6y = 12$

need slopes

$y = 3x + 5$

$m = 3$

$-2x \quad -2x$

$-6y = -2x + 12$

$\frac{-6y}{-6} = \frac{-2x}{-6} + \frac{12}{-6}$

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

$m = \frac{1}{3}$

Neither

$3x + 2y = 10$ and $2x + 3y = 18$

$-3x \quad -3x \quad -2x \quad -2x$

$\frac{2y}{2} = \frac{-3x}{2} + \frac{10}{2}$

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

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

$3y = -2x + 18$

$y = -\frac{2}{3}x + 6$

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

NEITHER

Write in General Form the equation of the line that meets the criteria listed below.

Goes through: $(-4, 3)$ and $(5, -1)$

$m = \frac{-1-3}{5-(-4)} = \frac{-4}{9}$

$y = -\frac{4}{9}x + b$

$-1 = -\frac{4}{9}(5) + b$

$-1 = -\frac{20}{9} + b$

$-\frac{9}{9} + \frac{20}{9} = b$

$b = \frac{11}{9}$

$\left(y = -\frac{4}{9}x + \frac{11}{9}\right)^{9}$

$9y = -4x + 11$

$4x - 11 \quad +4x - 11$

$4x + 9y - 11 = 0$

Goes through: $(7, 1)$ and $(-5, -4)$

$\frac{-4-1}{-5-7} = \frac{-5}{-12} = \frac{5}{12}$

$y = \frac{5}{12}x + b$

$1 = \frac{5}{12}(7) + b$

$1 = \frac{35}{12} + b$

$\frac{12}{12} - \frac{35}{12} = b$

$-\frac{23}{12} = b$

$\left(y = \frac{5}{12}x - \frac{23}{12}\right)^{12}$

$12y = 5x - 23$

$-12y \quad -12y$

$5x - 12y - 23 = 0$

Write the equation of a line that meets the following criteria.

A Vertical line that passes through point $(3, -4)$

$x = 3$

A Horizontal line that passes through point $(1, 4)$

$y = 4$