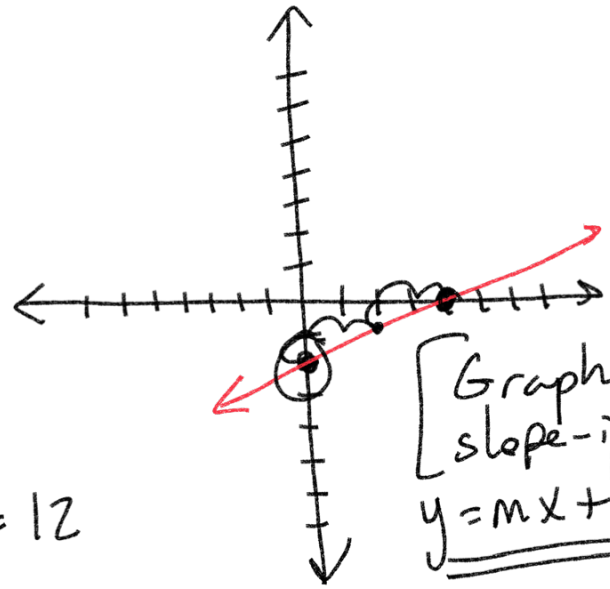
T-G Geometry 1/18

Graph

$3x - 6y = 12$



[Graph the intercepts]

$3x - 6y = 12$

$x = 4 \quad y = 0$

$(4, 0)$

$3x - 6y = 12$

$x = 0 \quad y = -2$

$\frac{-6y}{-6} = \frac{12}{-6}$

$y = -2$

$(0, -2)$

[Graph using slope-int]

$y = mx + b$

$3x - 6y = 12$

$-3x \qquad -3x$

$\frac{-6y}{-6} = \frac{-3x}{-6} + \frac{12}{-6}$

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

Find the linear equation for a line parallel to $3x - 6y = 12$ that goes through the point $(1, 2)$

1.) Find the slope of the given line. $m = \frac{1}{2}$

2.) Find parallel slope

3.) Use slope and point to make line.

$3x - 6y = 12$

$-3x \qquad -3x$

$\frac{-6y}{-6} = \frac{-3x}{-6} + \frac{12}{-6}$

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

slope of given line $m = \frac{1}{2}$

Slopes of parallel lines are the same or equal

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

$\overset{x\ \ y}{(1,2)}$

$y = mx + b$

$y = mx + b$

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

$2 = \frac{1}{2} + b$

$-\frac{1}{2} \quad -\frac{1}{2}$

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

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

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

Determine the linear equation for a line perpendicular to $y = -\frac{3}{4}x + 8$ that goes through the point $(6, -9)$

1.) Find original slope

2.) convert to perp slope

3.) use slope and pt to determine line.

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

slope $= -\frac{3}{4}$

$-\frac{3}{4} \longrightarrow \frac{3}{4} \longrightarrow \frac{4}{3}$

opposite — change sign

perpendicular inverse slope — flip it

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

$(6, -9)$

$y = mx + b$

$-9 = \frac{4}{\cancel{3}}(\cancel{6}^{2}) + b$

$-9 = 8 + b$

$-8 \quad -8$

$\boxed{b = -17}$

$$\boxed{y = \frac{4}{3}x - 17}$$