

Welcome! Please grab your ISN and
have a seat!

Copy and answer the following on page 36 at the bottom.

Write the point-slope form of the
equation of the line described.

18) through: (5, 2), parallel to $y = \frac{7}{5}x + 4$

$$y = \frac{7}{5}x + 4$$
$$y - 2 = \frac{7}{5}(x - 5)$$
$$y = \frac{7}{5}x - 5$$

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19) through: (3, 4), parallel to $y = \frac{9}{2}x - 5$

$$y = \frac{9}{2}x - 5$$
$$y - 4 = \frac{9}{2}(x - 3)$$
$$y = \frac{9}{2}x - \frac{19}{2}$$

Sep 11-2:05 PM

WWK page 8

Parallel lines -
perpendicular lines -

lines on the same plane that never intersect. Same slope
lines on the same plane that intersect at a 90° angle.
They have OPPOSITE RECIPROCAL SLOPES!

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

OPPOSITE RECIPROCAL

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

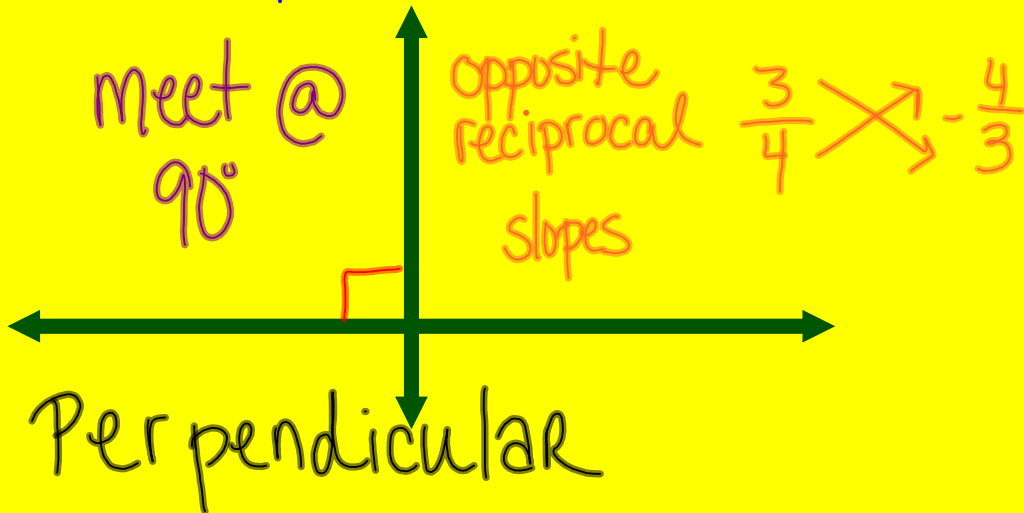
opposite reciprocal -

fractions that have
opposite numerators and denominators and
opposite signs

$$+\frac{3}{4} \times \frac{4}{3}$$

Sep 11-2:58 PM

TOC 39 Perpendicular Lines



Sep 11-3:00 PM

Write the equation of a line that is perpendicular to $y = \frac{2}{3}x + 1$ and passes through the point $(-4, 0)$

Steps

1. Identify the slope of the line you are given. Perpendicular lines have opposite reciprocal slopes
2. Label your slope as m and your ordered pair as (x_1, y_1)
3. Plug in your slope and point into point-slope form, which is $y - y_1 = m(x - x_1)$
4. Distribute the slope
5. Get y by itself.

Equations

$\frac{2}{3} \times -\frac{3}{2}$

$m = -\frac{3}{2}$ $(-4, 0)$
 x_1, y_1

$y - y_1 = m(x - x_1)$
 $y - 0 = -\frac{3}{2}(x - (-4))$

$y - 0 = -\frac{3}{2}x - \frac{12}{2}$
 $+0 \quad +0$

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

Sep 8-1:00 PM

Ex 1 (pg 40) Write the equation of the line that is perpendicular to:

a) $3x + 4y = 12$ through $(2, 0)$

$$\begin{array}{r} -3x \\ \hline 4y = -3x + 12 \\ \hline y = -\frac{3}{4}x + 3 \end{array}$$

x, y
 $y = -\frac{3}{4}x + 3$
 $-\frac{3}{4} \rightarrow m = \frac{4}{3}$

$$y - 0 = \frac{4}{3}(x - 2)$$

$$y - 0 = \frac{4}{3}x - \frac{8}{3}$$

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

b) $y = -1/2x + 3$ through $(-1, 1)$

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

$$y - 1 = 2(x - (-1))$$

$$y - 1 = 2x + 2$$

$$y = 2x + 3$$

c) $-2x - 6y = 12$ through $(0, 0)$

$$\begin{array}{r} +2x \quad +2x \\ \hline -6y = 2x + 12 \\ \hline -6 \quad -6 \quad -6 \\ \hline y = -\frac{1}{3}x - 2 \end{array}$$

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

$$y - 0 = 3(x - 0)$$

$$y = 3x$$

d) $y = 2/5x$ through $(2, -4)$

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

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

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

$$-4 \quad -4$$

$$y = -\frac{5}{2}x - 9$$

Sep 11-3:02 PM

Sep 20-10:10 AM