Slope formula: $\dfrac{y_2 - y_1}{x_2 - x_1}$

Ex 1: Find the slope of a line that contains points
P(-7, 2) and Q(-3, -1)

$\dfrac{-1-2}{-3-(-7)} = \dfrac{-3}{4}$ Slope $-\dfrac{3}{4}$

Try a) (-3, -2) and (-1, 2)   b) (-4, 6) and (-4, -2)

$\dfrac{2-(-2)}{-1-(-3)} = \dfrac{4}{2} = 2$ $\dfrac{-2-6}{-4-(-4)} = \dfrac{-8}{0}$

Slope 2   undefined

Slope-intercept form $y = mx + b$ ← y-int

Ex 2: Write an equation in slope-intercept form for a line
that has a slope of $\dfrac{4}{3}$ ← m and passes through (6, -5)
                                                           x   y

$-5 = \dfrac{4}{3}(6) + b$

$-5 = 8 + b$ $y = \dfrac{4}{3}x - 13$
$\underline{-8 \quad -8}$
$-13 = b$

Try... slope of $-\dfrac{1}{2}$ point (-6, 7)

$7 = -\dfrac{1}{2}(-6) + b$

$7 = 3 + b$
$\underline{-3 \quad -3}$
$4 = b$ $y = -\dfrac{1}{2}x + 4$

Point-Slope form $y - y_1 = m(x - x_1)$

slope

(x_1, y_1) coordinate point

Ex 3: It takes 16 minutes to swim 4 laps, and 28 minutes to swim 7 laps. Write an equation in point-slope form.

$(16, 4)$ $(28, 7)$

$m = \frac{7-4}{28-16} = \frac{3}{12} = \frac{1}{4}$ OR

$y - 4 = \frac{1}{4}(x - 16)$

$y - 7 = \frac{1}{4}(x - 28)$

Try... write an equation in point-slope form for a line that passes through $(-5, 9)$ and $(8, -1)$

$m = \frac{-1-9}{8-(-5)} = \frac{-10}{13}$

$y - 9 = -\frac{10}{13}(x+5)$

OR

$y + 1 = -\frac{10}{13}(x - 8)$

HW: Pg 27 #5-31 odd