Equations of Lines

Slope - intercept Form

$y = mx + b$

Slope - Point Form

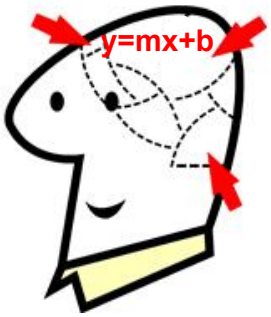
$y - y_1 = m(x - x_1)$

General Form

$ax + by + c = 0$

Slope - intercept Form

y = mx + b



Determine the equation of a line with a slope of 6 and a y-intercept of 15.

$m = 6 \quad b = 15$

$y = mx + b$

$y = 6x + 15$

Slope - Point Form

$y - y_1 = m(x - x_1)$

Determine the equation of a line with a slope of 5 and passing through the point (-3, 6).

$m = 5$ Point (1st) $(-3, 6)$ (x_1, y_1)

$y - y_1 = m(x - x_1)$

$y - 6 = 5(x - (-3))$

$y - 6 = 5(x + 3)$

General Form

ax + by +c = 0

Determine the equation of a line with a slope of 8 and passing through (4, -2).

HINT... Use the slope-point form to help you.

$m = 8$ Point $(4, -2)$ (x_1, y_1)

$y - y_1 = m(x - x_1)$

$y + 2 = 8(x - 4)$

$y + 2 = 8x - 32$

$0 = 8x - y - 32 - 2$

$0 = 8x - y - 34$

$8x - y - 34 = 0$

Let's Kick it up  a notch!

Determine the equation of a line passing through the points (11, 9) and (12, -3).

State your answer in slope-point form.

1st (x_1, y_1) 2nd (x_2, y_2) $(11, 9)$ $(12, -3)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{-3-9}{12-11}$$

$$m = \frac{-12}{1}$$

$$m = -12$$

$m = -12$ (x_1, y_1) $(11, 9)$

$$y - y_1 = m(x - x_1)$$

$$y - 9 = -12(x - 11)$$

Determine the equation of a line passing through the points (11, 9) and (12, -3).

State your answer in slope-point form.

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{-3 - 9}{12 - 11}$

$m = \frac{-12}{1}$

✓ $y - 9 = -12(x - 11)$

$y - 9 = -12x + 132$

$12x + y - 9 - 132 = 0$

$12x + y - 141 = 0$

$y - (-3) = -12(x - 12)$

$y + 3 = -12(x - 12)$

$y + 3 = -12x + 144$

$12x + y + 3 - 144 = 0$

$12x + y - 141 = 0$

Write the following in General form... ax + by + c = 0

$y = 4x - 7$

$0 = 4x - y - 7$

$4x - y - 7 = 0$

$y = \frac{3x}{2} - 9$ (×2 ×2 ×2)

$2y = 3x - 18$

$0 = 3x - 2y - 18$

$3x - 2y - 18 = 0$

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

$5y - 15 = 4(x - 2)$

$5y - 15 = 4x - 8$

$0 = 4x - 5y - 8 + 15$

$0 = 4x - 5y + 7$

$4x - 5y + 7 = 0$

State the Slope and the Point:

$y - y_1 = m(x - x_1)$

a) $y - 5 = 6(x - 3)$

Slope= 6 Point= (3, 5)

$y - y_1 = m(x - x_1)$

b) $y + 7 = 2/3(x - 9)$

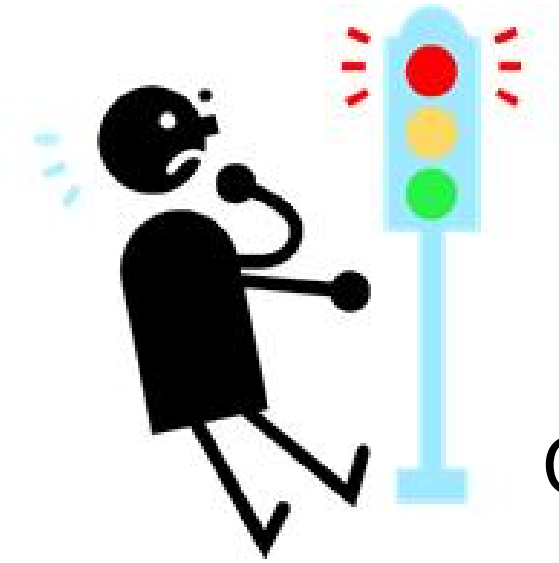
Slope= 2/3 Point= (9, -7)

c) $y - 8 = -4(x + 8)$

Slope= -4 Point= (-8, +8)

d) $y + 7 = 1/3(x - 4)$

Slope= 1/3 Point= (4, -7)



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Questions 4, 5(State answer in general form) 9a, 12