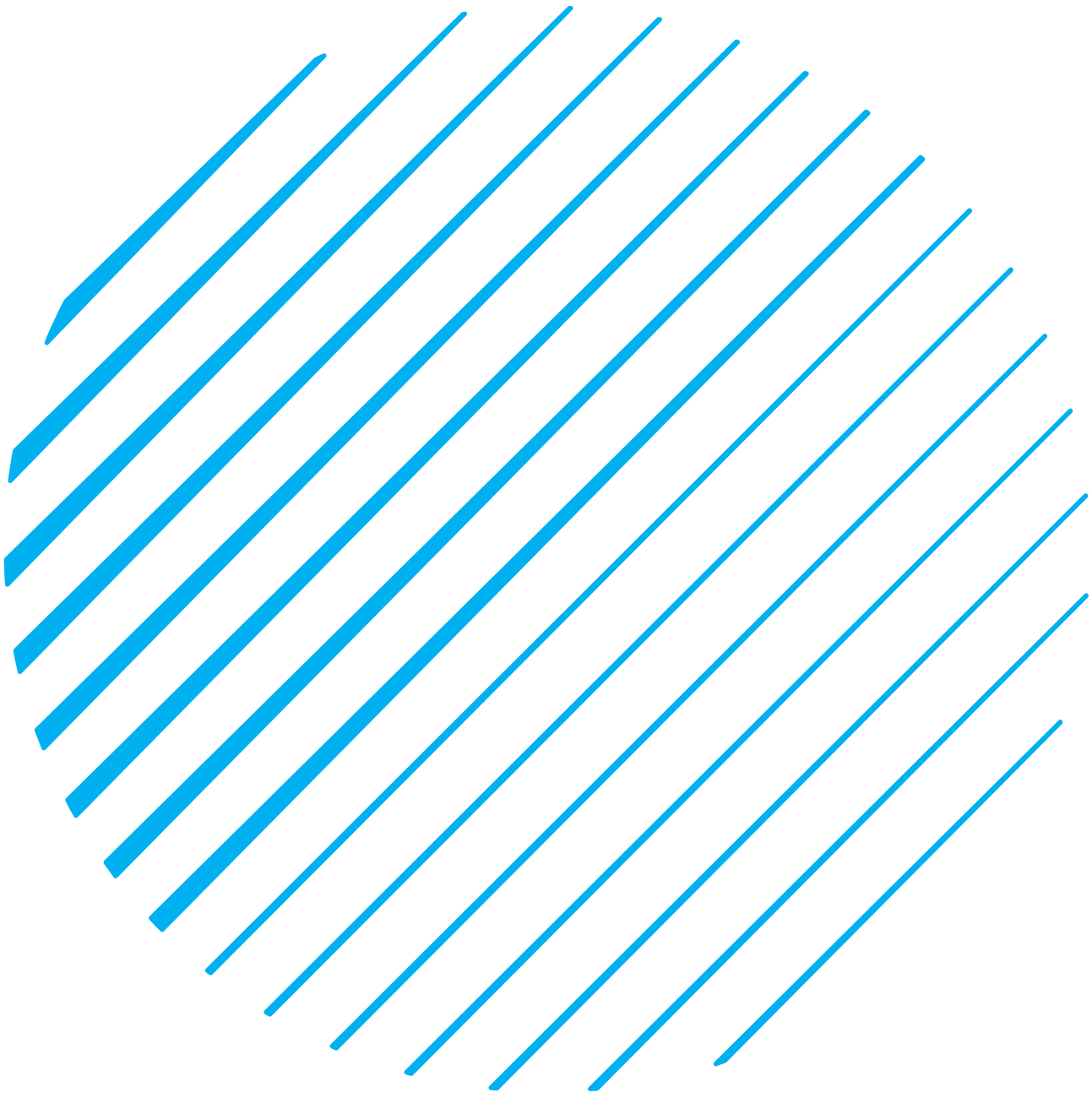
VITAL MATHEMATICS



ALGEBRA

POINT-SLOPE EQUATION OF A LINE

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INTRODUCTION

The point-slope equation of a line is a formula used to identify a specific linear equation, utilizing a given point and slope. The point-slope equation of a line uses m, x_1, and y_1 to calculate the linear equation taking the final form y = mx + b; known as the slope-intercept form.

POINT-SLOPE EQUATION OF A LINE EQUATION

$$y - y_1 = m(x - x_1) \ \ or \ \ y - y_1 = \left(\frac{y_2 - y_1}{x_2 - x_1}\right)(x - x_1)$$

$y - Dependent\ Variable$
$y_1 - y\ coordinate\ of\ P_1$
$y_2 - y\ coordinate\ of\ P_2$
$x - Independent\ Variable$
$x_1 - x\ coordinate\ of\ P_1$
$x_2 - x\ coordinate\ of\ P_2$
$m - Slope$

*Slope-intercept form

$$y = mx + b$$

$y - Dependent\ Variable$
$x - Independent\ Variable$
$b - y\ intercept$
$m - Slope$

SOLVING POINT-SLOPE EQUATION OF A LINE

$$y - y_1 = m(x - x_1) \ \ or \ \ y - y_1 = \left(\frac{y_2 - y_1}{x_2 - x_1}\right)(x - x_1)$$

STEP 1) Identify the slope. If the slope (m) is not given, identify the two points being used to calculate the slope.

STEP 2) Choose the Point that will be used to substitute x_1 and y_1. No matter which Point you use, you will attain the same answer. You MUST choose the entire ordered pair (x_1,y_1) or (x_1,y_1), you CANNOT miss matched the ordered pairs (x_1,y_2) or (x_2,y_1)

STEP 3) Substitute m, x_1, and y_1 with their values.

Example: $m = 3, \ x_1 = 2, \ y_1 = 4$

$$y - y_1 = m(x - x_1)$$
$$y - 4 = 3(x - 2)$$

STEP 4) Solve for y to attain the slope-intercept form.

STEP 5) Provide Conclusion

POINT-SLOPE EQUATION OF A LINE EXAMPLE

Example 1: Find the linear equation that pass through the points (3,1) and (7,4)

Example 2) Find the linear equation that pass through the points (-2,4) and (6,-9)

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