SLOPE OF A LINE

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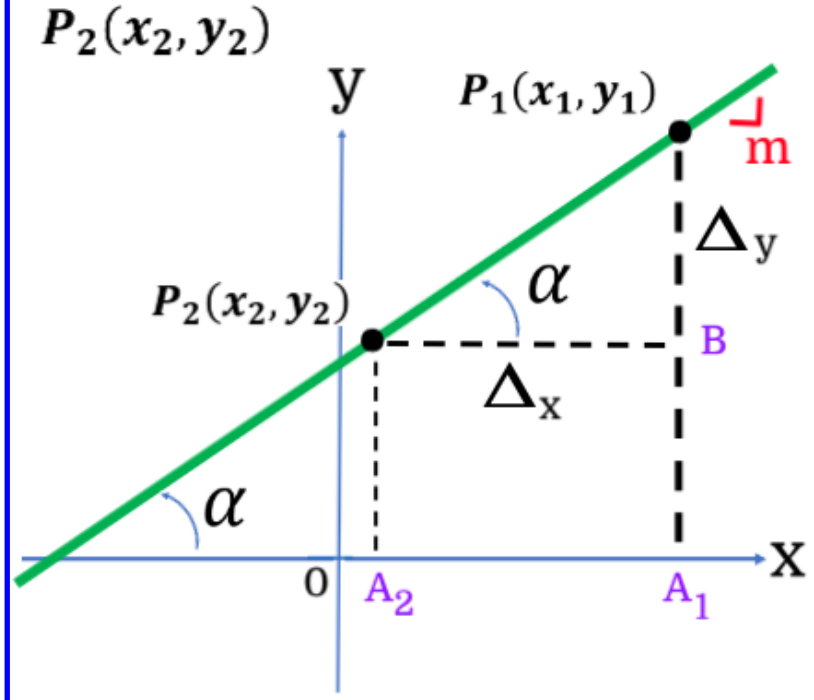
Given a line defined by the points $P_1(x_1, y_1)$;



Slope or angular coefficient (m) of a line is the tangent of its angle of inclination:

$$m = tan(\alpha) = \frac{\overline{BP_1}}{\overline{P_2B}} = \frac{\Delta_y}{\Delta_x}$$

Points:

$A_1(x_1, 0), A_2(x_2, 0) \wedge B(x_1, y_2)$

Distance of each segment:

$$\overline{BP_1} = y_1 - y_2$$

$$\overline{P_2B} = x_1 - x_2$$

Substituting:

SLOPE OF A STRAIGHT LINE

$$\begin{cases} m = \dfrac{y_1 - y_2}{x_1 - x_2} \; ; \; x_1 \neq x_2 \end{cases}$$

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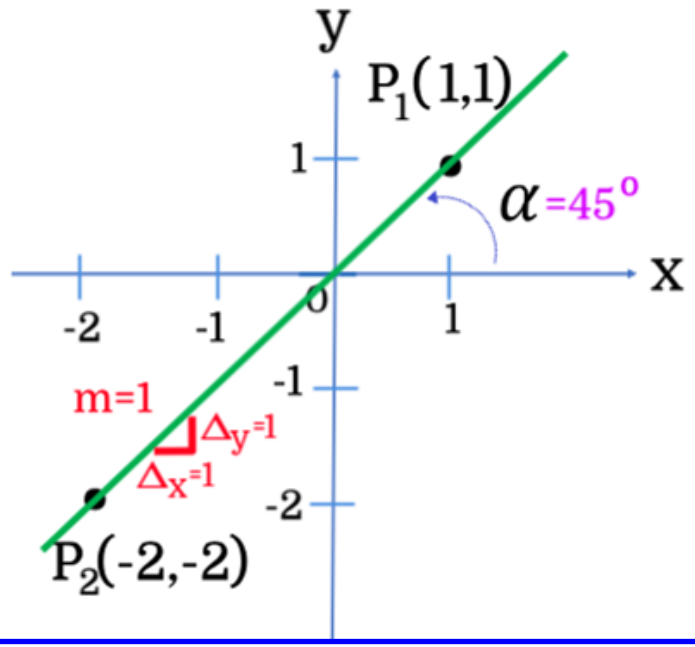
EXAMPLE: Find the slope and the angle of inclination of the line passing through the points $P_1(1,1)$ and $P_2(-2,-2)$?

SOLUTION:



Slope of a line given two points:

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

$$m = \frac{1-(-2)}{1-(-2)}$$

$$m = \frac{3}{3} = \frac{1}{1} = \frac{\Delta_y}{\Delta_x}$$

$$m = 1$$

Slope or angular coefficient (m):

$$m = tan(\alpha)$$

$$1 = tan(\alpha)$$

$$\alpha = arctan(1) = 45^o$$

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