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Mat 10 2

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mechatronics

1) Distance between two points = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$$\begin{aligned}\overline{AB} &= \sqrt{(-2 - (-6))^2 + (1 - (-5))^2} \\ &= \sqrt{(-8)^2 + (6)^2} \\ &= \sqrt{64 + 36} = \sqrt{100} = 10 \text{ units}\end{aligned}$$

$$\begin{aligned}\overline{AC} &= \sqrt{(0 - (-6))^2 + (3 - (-5))^2} \\ &= \sqrt{(-6)^2 + (8)^2} \\ &= \sqrt{36 + 64} \\ &= \sqrt{100} = 10 \text{ units}\end{aligned}$$

$$\begin{aligned}\overline{BC} &= \sqrt{(0 - (-2))^2 + (3 - 1)^2} \\ &= \sqrt{2^2 + 2^2} \\ &= \sqrt{4 + 4} = \sqrt{8}\end{aligned}$$

This points form an isosceles ~~the~~ triangle because:

$$\overline{AB} = \overline{AC} \neq \overline{BC}$$

2) $P = (5, -3)$

$$Q = (-4, 9)$$

$$R = (14, -15)$$

P divides QR

Let ratio = $x:y$

$$\frac{x(14) + y(-4)}{x+y} = 5$$