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19/ENG02/043

MAT 102 / COMP ENG

Computer Engineering

1. Show that the points A $(6, -5)$ B $(-2, 1)$ C $(0, 3)$ form an isosceles triangle.

2. If P, Q and R are points $(5, -3)$, $(-4, 9)$ and $(14, -15)$ respectively. Find the relation which (a) P divides QR (b) R ÷ PQ

Solution

(1) A $(6, -5)$ B $(-2, 1)$ & C $(0, 3)$

$$AB = \sqrt{(6--2)^2 + (1--5)^2}$$

$$= \sqrt{8^2 + 6^2}$$

$$= \sqrt{64 + 36}$$

$$= 100 \text{ sq unit}$$
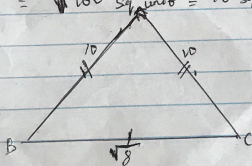
$$BC = \sqrt{(0+2)^2 + (3-1)^2}$$

$$= \sqrt{4 + 4}$$

$$= \sqrt{8} \text{ sq unit}$$

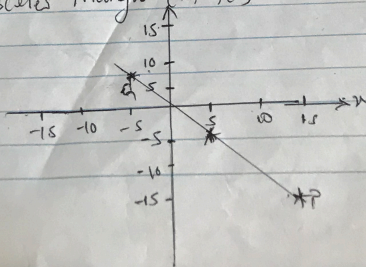$$AC = \sqrt{(0+6)^2 + (3+5)^2}$$

$$= \sqrt{6^2 + 8^2}$$

$$= \sqrt{36 + 64}$$

$$= \sqrt{100} \text{ sq unit} = 10 \text{ sq unit}$$

Isosceles Triangle (A, B, C)

2.

ⓐ Internal division $\Rightarrow (x,y) = \dfrac{x_1 + kx_2}{l+k}, \dfrac{y_1 + ky_2}{l+k}$

Using x

$5 = \dfrac{4l + 14k}{l+k}$

$5l + 5k = 14l + 14k$

$9l = 9k$

The ratios which p divides QR is $1:1$

② External Division $\Rightarrow (x,y) = \dfrac{x_1 l - x_2 k}{l+k}, \dfrac{y_1 l - y_2 k}{l+k}$

Using y

$-15 = \dfrac{9l - (-3)k}{l+k}$

$-15l - 15k = 9l + 3k$

$-15l - 9l = 3k + 15k$

$-24l = 18k$

$-4l = 3k$

$4l = 3k$

$t/k = 3/4 \therefore k/l = 4/3$

The ratio that R divides $PQ = 4:3$