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MAT 102
043
19/ENG02/072.
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 Ratio in which (a) p divides QR (b) R ÷ PQ

Solution:-

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

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

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

$= \sqrt{64 + 36}$

$= 100$ sq unit

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

$= \sqrt{4 + 4}$

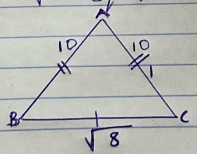
$= \sqrt{8}$ sq unit

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

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

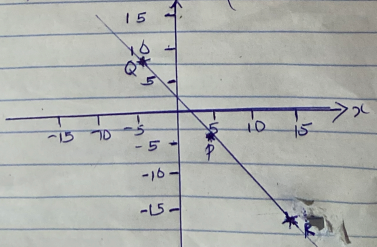
$= \sqrt{36+64}$

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



Isosceles Triangle (A, B, C).

(2)



(a) Internal division $\Rightarrow (x,y) = \left(\frac{x_1 + Kx_2}{L+K}, \frac{y_1 + Ky_2}{L+K}\right)$

Using x

$$5 = \frac{-4L + 14K}{L+K}$$

$$5L + 5K = 14L + 14K$$

$$9L = 9K$$

The Ratio which p divides QR is 1:1.

(b) External Division $\Rightarrow (x,y) = \left(\frac{x_1 L - x_2 K}{L+K}, \frac{y_1 L - y_2 K}{L+K}\right)$

Using y

$$-15 = \frac{9L - (-3)K}{L+K}$$

$$-15L - 15K = 9L + 3K$$

$$-15L - 9L = 3K + 15K$$

$$-24L = 18K$$

$$\frac{-24L}{6} = \frac{18K}{6}$$

$$-4L = 3K$$

$$\frac{L}{K} = \frac{3}{4} \quad \therefore K/L = 4/3$$

The ratio that R divides PQ = 4:3.