

(a) P divides QR internally

$$\text{Using } x = \frac{lx_2 + Kx_1}{L+K}$$

$$P(x_1, y_1) = (5, -3)$$

$$Q(x_2, y_2) = (-4, 9)$$

$$R(x_1, y_1) = (14, -15)$$

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

$$5L + 5K = -4L + 14K$$

$$5L + 4L = 14K - 5K$$

$$9L = 9K$$

$$\frac{K}{L} = \frac{1}{1}$$

$$K:L = 1:1$$

b) R divides PQ externally

$$R(14, -15) = (x_2, y_2)$$

$$P(5, -3) = (x_1, y_1)$$

$$Q(-4, 9) = (x_2, y_2)$$

$$\text{Using } y = \frac{ly_1 + Ky_2}{L-K}$$

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

$$-15(L-K) = -3L - 9K$$

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

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

$$-12L = -24K$$

$$\frac{K}{L} = \frac{12}{12} = 1$$

$$24 = -12L$$

$$K = \frac{12L}{24} = \frac{1}{2}L$$

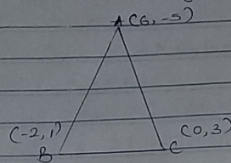
$$\therefore K:L = 1:2$$

JOHN-UGWU NWIDOMA FAVOUR

181ENG021052 (CARRY OVER)

COMPUTER ENGINEERING

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



soln

AB, BC and CA

$$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$= \sqrt{(-2 - 6)^2 + (1 - (-5))^2}$$
$$= \sqrt{-8^2 + 6^2} = 10$$

$$\text{For BC} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$= \sqrt{(0 - (-2))^2 + (3 - 1)^2}$$
$$= \sqrt{2^2 + 2^2} = 2\sqrt{2}$$

$$\text{For CA} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$= \sqrt{(6 - 0)^2 + (-5 - 3)^2}$$
$$= \sqrt{6^2 + (-8)^2}$$
$$= 10$$

Isosceles triangle AB = CA  $\neq$  BC

Two equal sides and one unequal side.

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 divides PQ

solution

$$x_1 = 5$$

$$x_2 = -4$$

$$x_3 = 14$$

$$y_1 = -3$$

$$y_2 = 9$$

$$y_3 = -15$$