

ILODIBE ANTHONY UDENNA

COMPUTER ENGINEERING

MAT 102

19/ENG02/026

SERIAL NO: 35

① $A(6, -5)$ $B(-2, 1)$ $C(0, 3)$

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

$$= \sqrt{(-8)^2 + (6)^2}$$

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

$$= \sqrt{100}$$

$$\overline{AB} = 10$$

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

$$= \sqrt{(2)^2 + (2)^2}$$

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

$$= \sqrt{8}$$

$$\overline{BC} = 2.83$$

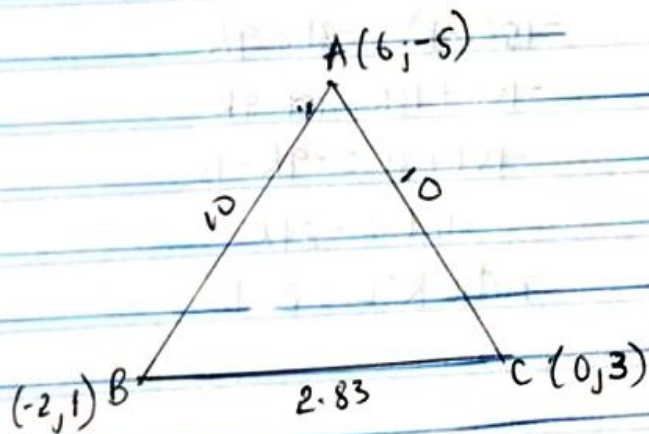
$$\overline{AC} = \sqrt{(0-6)^2 + (3-(-5))^2}$$

$$= \sqrt{(-6)^2 + (8)^2}$$

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

$$= \sqrt{100}$$

$$\overline{AC} = 10$$



∴ Points $A(6, -5)$, $B(-2, 1)$, $C(0, 3)$ form an isosceles triangle

② $P(5, -3)$, $Q(-4, 9)$, $R(14, -15)$

③ P divides QR

$$x_1 = -4$$

$$x_2 = 14$$

$$x = 5$$

$$x = \frac{lx_1 + kx_2}{l+k}$$

$$x = \frac{lx_1 + kx_2}{L+k}$$

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

$$5(L+k) = -4L + 14k$$

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

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

$$9L = 9k$$

$$\text{ratio } k:L = 1:1$$

⑥ R divides PQ

$$y = \frac{ly_1 - ky_2}{L-k}$$

$$\text{PQ gives } (x_1, y_1) = (5, -3)$$

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

$$(x, y) = (14, -15)$$

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

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

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

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

$$-12L = -24k$$

$$\text{ratio } k:L = 2:1$$