

NAME: ALONYENU TREASURE AGBENU-OWO

DEPARTMENT: CIVIL ENGINEERING

MARTIC NUMBER: 19/ENG03/005

MAT 102 ASSIGNMENT

✓ Aloranyeru Treasure Agbenuru-oro

✓ Civil Engineering

✓ 19/ENG03/005

✓ MAT 102 Assignment

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

An isosceles triangle is a triangle in which only 2 of its sides are equal.

$$AB = \sqrt{(6-(-2))^2 + (-5-1)^2} = \sqrt{64+36} = \sqrt{100} = 10$$

$$AC = \sqrt{(6-0)^2 + (-5-3)^2} = \sqrt{36+64} = \sqrt{100} = 10$$

$$BC = \sqrt{(-2-0)^2 + (1-3)^2} = \sqrt{4+4} = \sqrt{8} = 2$$

Since, $AB = AC \neq BC$ therefore it is an isosceles triangle.

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

$$x_1 = 5$$

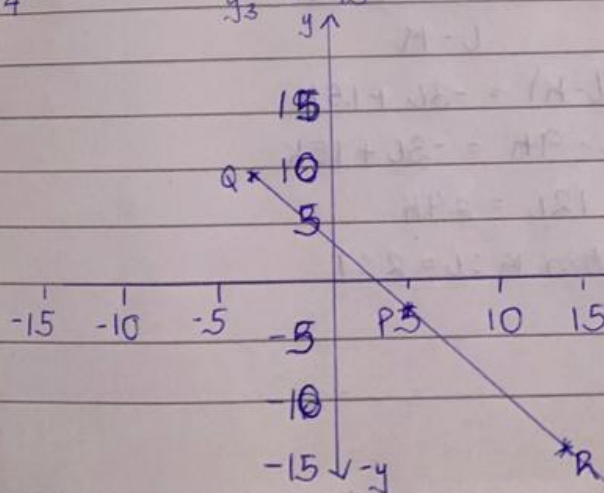
$$y_1 = -3$$

$$x_2 = -4$$

$$y_2 = 9$$

$$x_3 = 14$$

$$y_3 = -15$$



a. P divides \overline{QR} internally therefore,
From the graph the line \overline{QR} gives $(x,y) = (-4, 14)$

$$\text{using } x = \frac{lx_1 + Kx_2}{L+K}$$

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

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

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

$$9L = 9K$$

$$\therefore \text{ratio } K:L = 1:1$$

b. R divides \overline{PQ} externally therefore,

From the graph the line \overline{PQ} gives $(x,y) = (5, -3)$

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

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

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

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

$$12L = 24K$$

$$\therefore \text{ratio } K:L = 2:1$$