Wisdom Friday Johnny
Civil Engineering
19/ENG03/015

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.

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

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

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

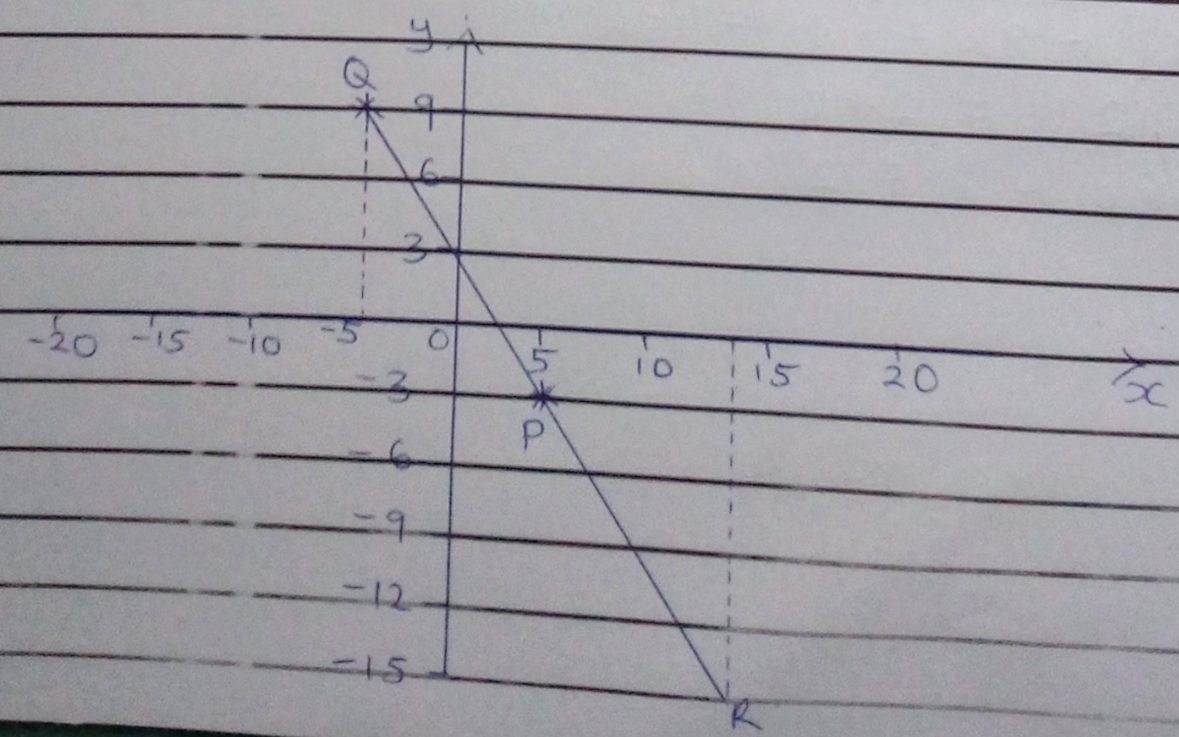
Since, $\overline{AB} = \overline{AC} \neq \overline{BC}$ therefore it is an Isosceles triangle.

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

$x_1 = 5$ $\quad y_1 = -3$

$x_2 = -4$ $\quad y_2 = 9$

$x_3 = 14$ $\quad y_3 = -15$



a.) P divides $\overline{QR}$ internally therefore,

From the graph the line $\overline{QR}$ gives $(x, y) = (-4, 14)$ x_1 x_2

Using $x = \frac{lx_1 + Kx_2}{l + K}$

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

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

$9l = 9K$

$\therefore$ Ratio $K : l \Rightarrow 1 : 1$

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

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

$y_1 = -3$, $y_2 = -15$, $y = 9$

Using $y = \frac{ly_1 - Ky_2}{l - K}$

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

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

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

$12l = 24K$

$\therefore$ Ratio $K : l = 2 : 1$