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Math 102 SU: 046
Assignment

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

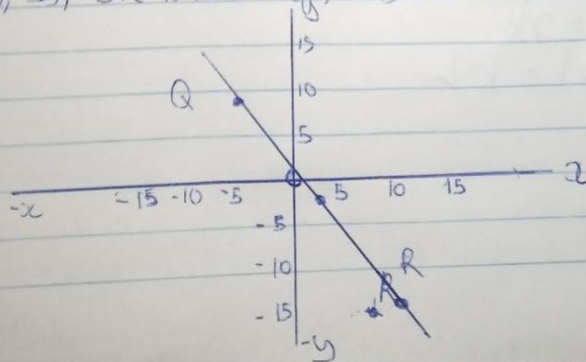
$$\begin{aligned} \overline{AB} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-2 - 6)^2 + (1 - 5)^2} \\ &= \sqrt{(-8)^2 + (-4)^2} \\ &= \sqrt{64 + 16} \\ &= \sqrt{80} \\ &= 4\sqrt{5} \end{aligned}$$

$$\begin{aligned} \overline{AC} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(0 - 6)^2 + (3 - 5)^2} \\ &= \sqrt{(-6)^2 + (-2)^2} \\ &= \sqrt{36 + 4} \\ &= \sqrt{40} \\ &= 2\sqrt{10} \end{aligned}$$

$$\begin{aligned} \overline{BC} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(0 - 2)^2 + (3 - 1)^2} \\ &= \sqrt{(-2)^2 + (2)^2} \\ &= \sqrt{4 + 4} \\ &= \sqrt{8} \\ &= 2\sqrt{2} \end{aligned}$$

$\overline{AB} = \overline{AC}$ therefore $\triangle ABC$ is an isosceles triangle

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



a P divides QR internally

$$(x_1, y_1) = (4, 9)$$

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

$$(x, y) = (5, -3)$$

$$x = \frac{Lx_1 + Kx_2}{L+K}$$

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

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

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

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

$$9L = 9K$$

$$L = K$$

$$1:1 = K:L$$

B R divides PQ externally

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

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

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

$$y = \frac{Ly_1 - Ky_2}{L - K}$$

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

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

Divide both sides by 3

$$5(L - K) = L + 3K$$

$$5L - 5K = L + 3K$$

$$5L - L = 3K + 5K$$

$$4L = 8K$$

$$L = 2K$$

$$2:1 = K:L$$

