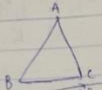


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(1)



$$\text{Distance AB} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$x_1 = 6 \quad y_1 = -5$$

$$x_2 = -2 \quad y_2 = 1$$

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

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

$$AB = \sqrt{64 + 36} = \sqrt{100} = 10$$

$$\text{Distance AC} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$x_1 = 6 \quad y_1 = -5$$

$$x_2 = 0 \quad y_2 = 3$$

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

$$= \sqrt{(-6)^2 + (8)^2} = \sqrt{100} = 10$$

$$\text{Distance BC} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

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

$$= \sqrt{(-8)^2 + (6)^2} = \sqrt{100} = 10$$

Since $AB = AC$
 The triangle is isosceles

(2) $x = \frac{Lx_1 + kx_2}{L+k}$ $x=5, x_1=-4, x_2=14$
 $L+k \quad L+k$

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

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

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

$$\frac{9L}{7} = \frac{9k}{8} \quad L=k \quad \therefore \frac{k}{L} = 1$$

The ratio is 1:1

$$y = \frac{Ly_1 + ky_2}{L+k} \quad y = -3, y_1 = 9, y_2 = -15$$

$$L+k \quad L+k$$

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

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

$$-12L = -12k$$

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

Therefore P divides QR = 1:1

(B) $x = \frac{Lx_1 - kx_2}{L-k}$ $x_1=5, x_2=-4, x=14$
 $L-k \quad L-k$

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

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

$$\frac{9L}{9k} = \frac{18k}{9k} \quad \frac{1}{2} = \frac{k}{L} = 2:1$$

$$y = \frac{Ly_1 - ky_2}{L-k} \quad y_1=3, y_2=9, y=-15$$

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

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

$$-12L = -24k$$

$$-12k = -12k$$

$$\frac{L}{2} = \frac{k}{1}$$

$$L = 2k$$

$$\therefore \frac{1}{2} = \frac{k}{L}$$

The ratio R divides PQ = 2:1