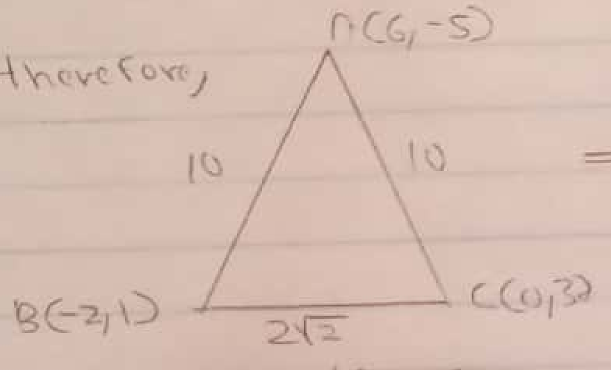
(1) A(6, -5)
B(-2, 1)
C(0, 3)

Line AB ($\bar{AB}$) $= \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$
$= \sqrt{(-2-6)^2 + (1+5)^2}$
$= \sqrt{64+36}$
$= \sqrt{100}$
$= 10\,cm$

Line BC ($\bar{BC}$) $= \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$
$= \sqrt{(0+2)^2 + (3-1)^2}$
$= \sqrt{4+4}$
$= \sqrt{8}$
$= 2\sqrt{2}\,cm$

line AC ($\bar{AC}$) $= \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$
$= \sqrt{(0-6)^2 + (3+5)^2}$
$= \sqrt{36+64}$
$= \sqrt{100}$
$= 10\,cm$

therefore,

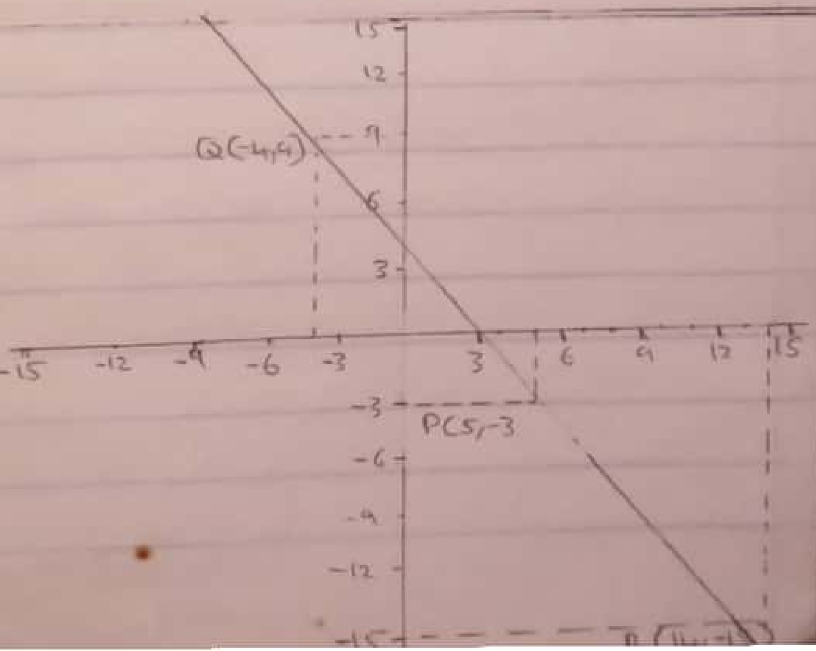



$\Longrightarrow$ Since $\bar{AB} = \bar{AC} = 10$. its an isosceles triangle since only 2 of its sides are equal in length.

Note: Diagram not drawn to scale

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

| | |
|---|---|
| $x_1 = 5$ | $y_1 = -3$ |
| $x_2 = -4$ | $y_2 = 9$ |
| $x_3 = 14$ | $y_3 = -15$ |



(i) P divides $\overline{QR}$ internally

$x = 5$

$x_1 = -4$

$x_2 = 14$

$$x = \frac{L(x_1) + k(x_2)}{L+k}$$

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

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

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

$$9L = 9k$$

$\therefore$ P divides $\overline{QR}$ in $k : L = 1 : 1$ 4

(ii) P divides $\overline{PQ}$ Externally

$x = 14$

$x_1 = 5$

$x_2 = -4$

$$x = \frac{L(x_1) - k(x_2)}{L-k}$$

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

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

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

$$9L = 18k$$

$\therefore$ R divides $\overline{PQ}$ Externally in $k : L = 2 : 1$ m