

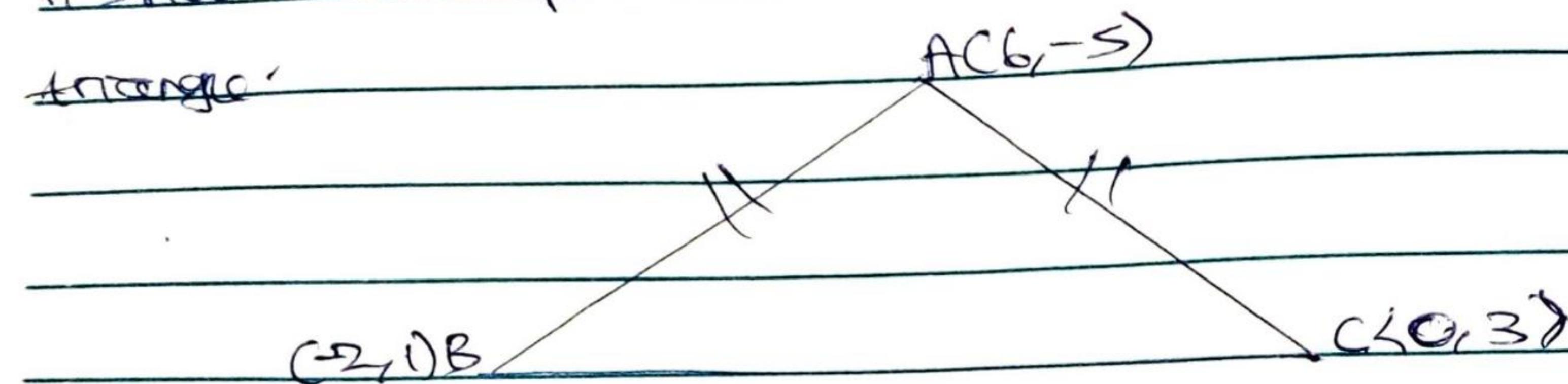
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Computer Engineering

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Maths 102 assignment

Show that the points $A(6, -5)$, $B(-2, 1)$, $C(0, 3)$ form an isosceles



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

$$\overline{AB} = \sqrt{(-2 - 6)^2 + (1 - (-5))^2} = \sqrt{(-8)^2 + (6)^2}$$

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

$$\overline{AB} = 10 \text{ sq units}$$

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

$$\overline{AC} = \sqrt{(0 - 6)^2 + (3 - (-5))^2} = \sqrt{(-6)^2 + (8)^2}$$

$$\overline{AC} = \sqrt{36 + 64} = \sqrt{100}$$

$$\overline{AC} = 10 \text{ sq units}$$

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

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

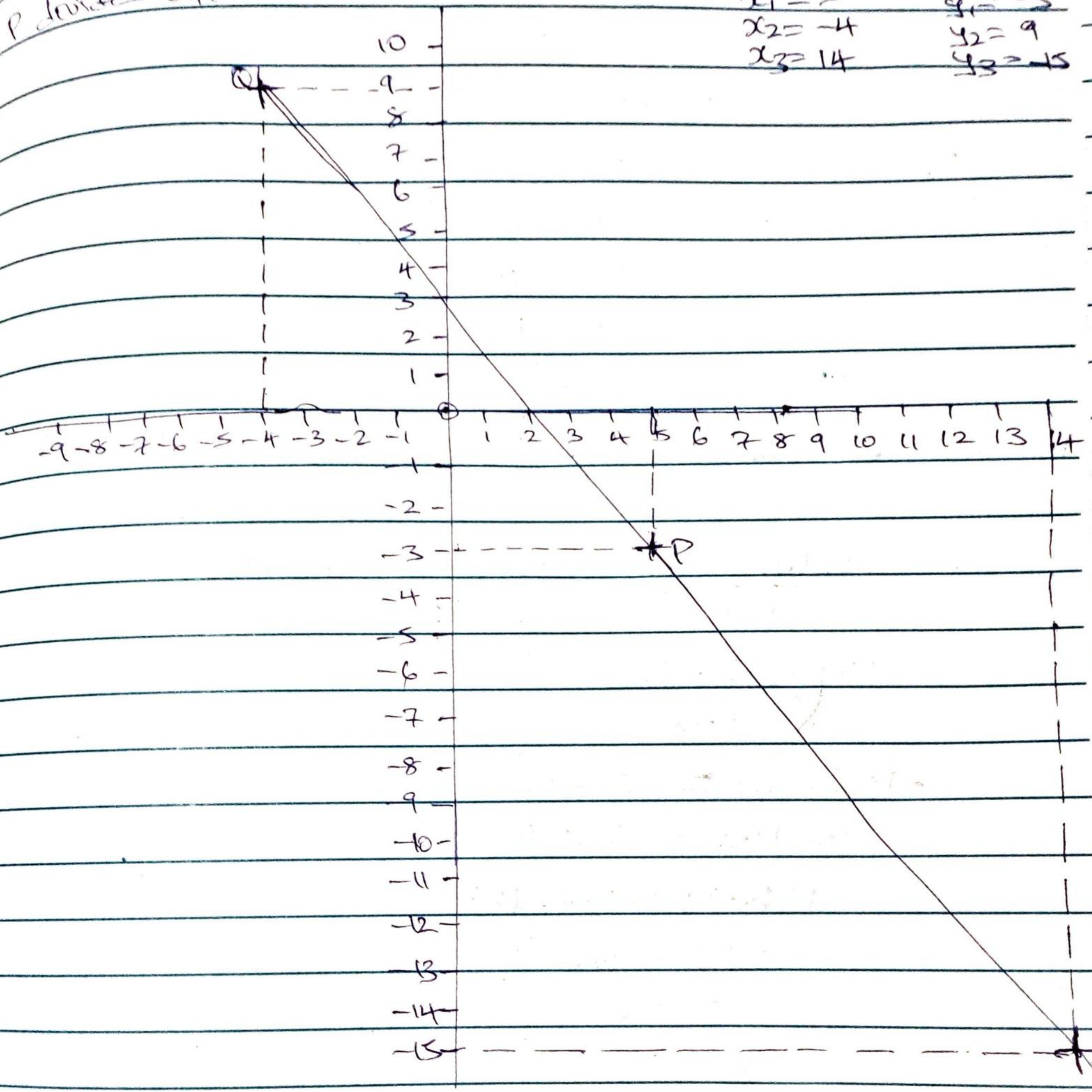
$$\overline{BC} = \sqrt{4 + 4} = \sqrt{8}$$

∴ An isosceles triangle has two equal sides and since

$\overline{AB} = \overline{AC}$, ∴ ABC is an isosceles triangle.

of A, P, Q and R are points $(5, -3)$, $(-4, 9)$ and $(14, -15)$ respectively. Find the ratio in which P divides QR

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



P divides QR internally $x = \frac{LQ_1 + KQ_2}{L+K}$

$$x_1 = -4$$
$$x_2 = 14$$
$$x = 5$$

$$S = \frac{-4L + 14K}{L+K}$$

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

$$SL + SK = -4L + 14K$$

$$SL + 4L = 14K - SK$$

$$9L = 9K$$

$$L = K$$

$$\therefore K:L = 1:1$$

b) R divides PQ externally $y = \frac{Ky_1 - Ky_2}{L-K}$

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

$$y_1 = -3 \quad y_2 = 9 \quad y = -15$$

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

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

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

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

$$24K = 12L$$

$$2K = L$$

$$\therefore K:L = 2:1$$