

Name: Bruce A. Brown

Matric: 19/EUG05/002

Mechatronic Engineering

MAT 102

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

$$\text{Dist btw } |AB| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$= \sqrt{(-2) - (6))^2 + (1 - (-5))^2} = \sqrt{(-8)^2 + 6^2}$$

$$|AB| = \sqrt{100} = 10$$

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

$$= \sqrt{6^2 + 8^2} = \sqrt{100}$$

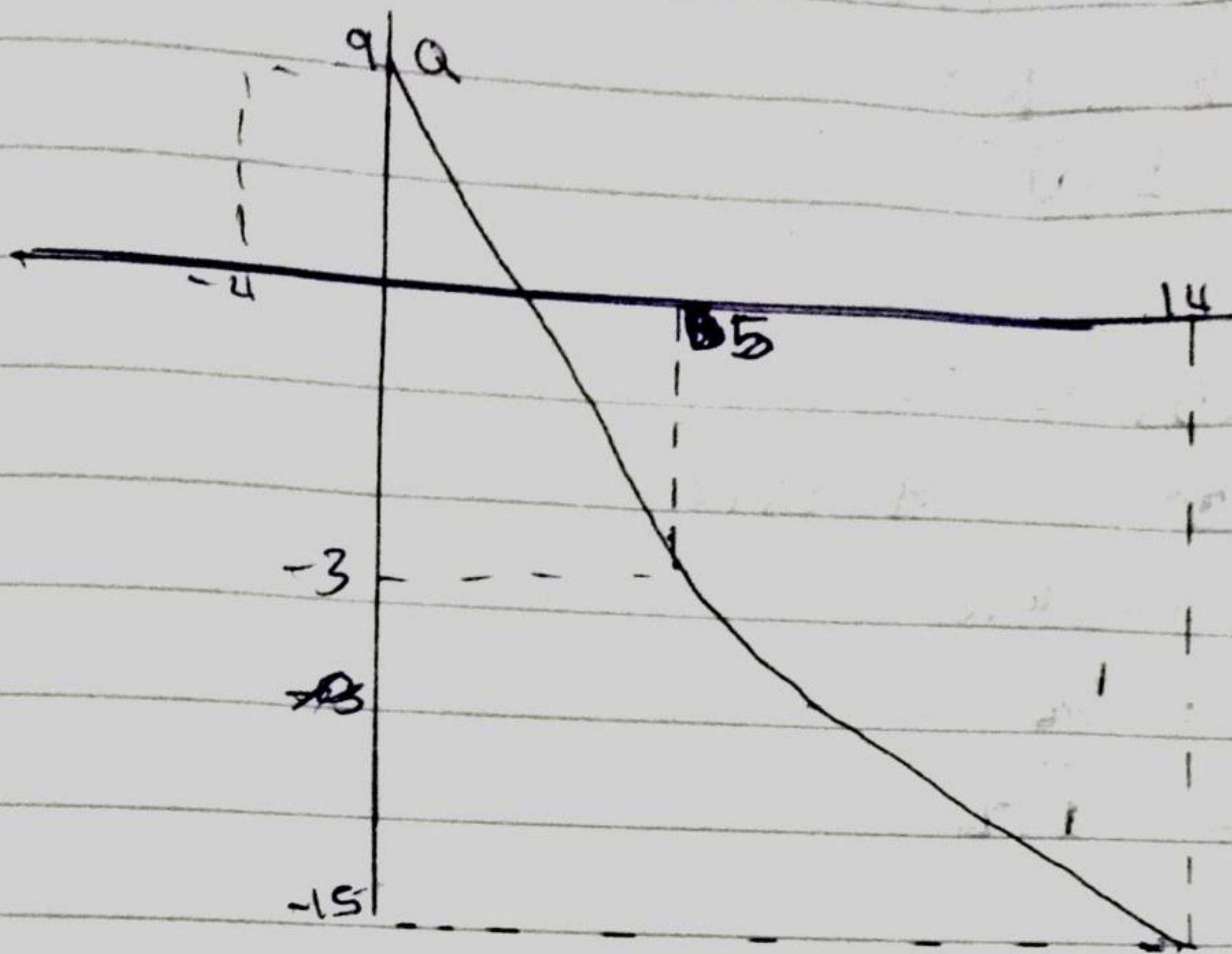
$$|AC| = \frac{10}{2}$$

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

$$= \sqrt{4 + 4} = 2\sqrt{2}$$

∴ it is an isosceles triangle because
 $|AC|$ and $|AB|$ are equal.

2)



P divide QR internally hence $y = \frac{Ly_1 + Ky_2}{L + K}$

$$(x, y_1) = (-4, 9) \quad (x_2, y_2) = (14, -15), \quad (x, y) = (5, -3)$$

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

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

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

$$= -12L = -12K$$

$$\frac{2}{K} = \frac{1}{K}$$

R divides QA externally hence $y = \frac{Ly_1 - Ky_2}{L - K}$

$$1 \quad (x_1, y_1) = (5, -3) \quad (x_2, y_2) = (-4, 9) \quad (x, y) = (14, -18)$$
$$\frac{-15L - 3L - 1K}{L - 1K} = 9$$

$$-15L + 15K = -3L - 1K \cdot 9$$

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

$$-12L = -24K$$

$$\frac{L}{K} = \frac{2}{2}$$

$$L : K = 1 : 2$$