H.W. 05 | 08

Exercise - 7.1

Q1.(i) P(2, 3) and Q(4, 1).

$x_1 = 2$, $y_1 = 3$, $x_2 = 4$ and $y_2 = 1$

$\therefore$ Dist. $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

$= \sqrt{(4-2)^2 + (1-3)^2}$.

$= \sqrt{(2)^2 + (-2)^2} = \sqrt{4+4}$.

$= \sqrt{8} = 2\sqrt{2}$ units.

(ii) P(-5, 7) and Q(-1, 3).

$x_1 = -5$.

$y_1 = 7$.

$x_2 = -1$.

$y_2 = 3$.

$\therefore$ Dist. $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

$= \sqrt{(-1+5)^2 + (3-7)^2}$.

$= \sqrt{(4)^2 + (-4)^2} = \sqrt{16+16}$.

$= \sqrt{32} = 4\sqrt{2}$ units.

(iii) P(a, b).

Q(-a, -b).

$x_1 = a$.

$y_1 = b$.

$x_2 = -a$.

$y_2 = -b$.

$\therefore$ Dist. $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 -$

$= \sqrt{(-a-a)^2 + (-b-b)^2}$

$= \sqrt{(-2a)^2 + (-2b)^2}$.

$= \sqrt{2\sqrt{a^2 + b^2}}$ units.

Q2. A(0, 0).

B(36, 15).

$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \sqrt{(36-0)^2 + (15-0)^2}$.

$= \sqrt{1296 + 225} = \sqrt{1521} = 39$ units.

Q3. A(1, 5).

B(2, 3).

C(-2, -11).

$AB = \sqrt{(2-1)^2 + (3-5)^2} = \sqrt{(1)^2 + (-2)^2}$.

$= \sqrt{1+4} = \sqrt{5}$.

$BC = \sqrt{(-2-2)^2 + (-11-3)^2} = \sqrt{(-4)^2 + (-14)^2}$.

$= \sqrt{16+196} = \sqrt{212} = 2\sqrt{53}$.

$AC = \sqrt{(-2-1)^2 + (-11-5)^2} = \sqrt{(-3)^2 + (-16)^2}$.

$= \sqrt{9+256} = \sqrt{265}$.

Since $AB + BC \neq AC$.

Q4. A(5, -2).

B(6, 4).

C(7, -2).

$AB = \sqrt{(6-5)^2 + (4+2)^2} = \sqrt{1+36} = \sqrt{37}$.

$BC = \sqrt{(7-6)^2 + (-2-4)^2} = \sqrt{1+36} = \sqrt{37}$.

$AC = \sqrt{(7-5)^2 + (-2+2)^2} = \sqrt{4+0} = \sqrt{2}$.