COORDINATE GEOMETRY

① (i) (2, 3), (4, 1)

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

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

$$= \sqrt{(2)^2 + (-2)^2} \quad = \sqrt{4+4} = \sqrt{8} = 2\sqrt{2}.$$

(ii) (−5, 7), (−1, 3)

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

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

$$AB = \sqrt{16+16} = \sqrt{32} = 4\sqrt{2}$$

(iii) (a, b), (−a, −b)

we know that,

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

Then,

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

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

$$= \sqrt{4a^2 + 4b^2}$$

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

③ Given town B is located 36 Km east & 15 Km north.

If $(x_1, y_1) = (0, 0)$ &
(x_2, y_2) becomes $= (36, 15)$

Then, the distance between two towns will be.

By the formula:

$$PQ = \sqrt{(x_2 - x_1) + (y_2 - y_1)}$$

Let us consider x_2 as 36 and y^2 then, putting the values, we get as 15.

$$PQ = \sqrt{(36-0)^2 + (15-0)^2}$$

$$= \sqrt{(36)^2 + (15)^2}$$

$$= \sqrt{1296 + 225}$$

$$= \sqrt{1521} = 39 km.$$

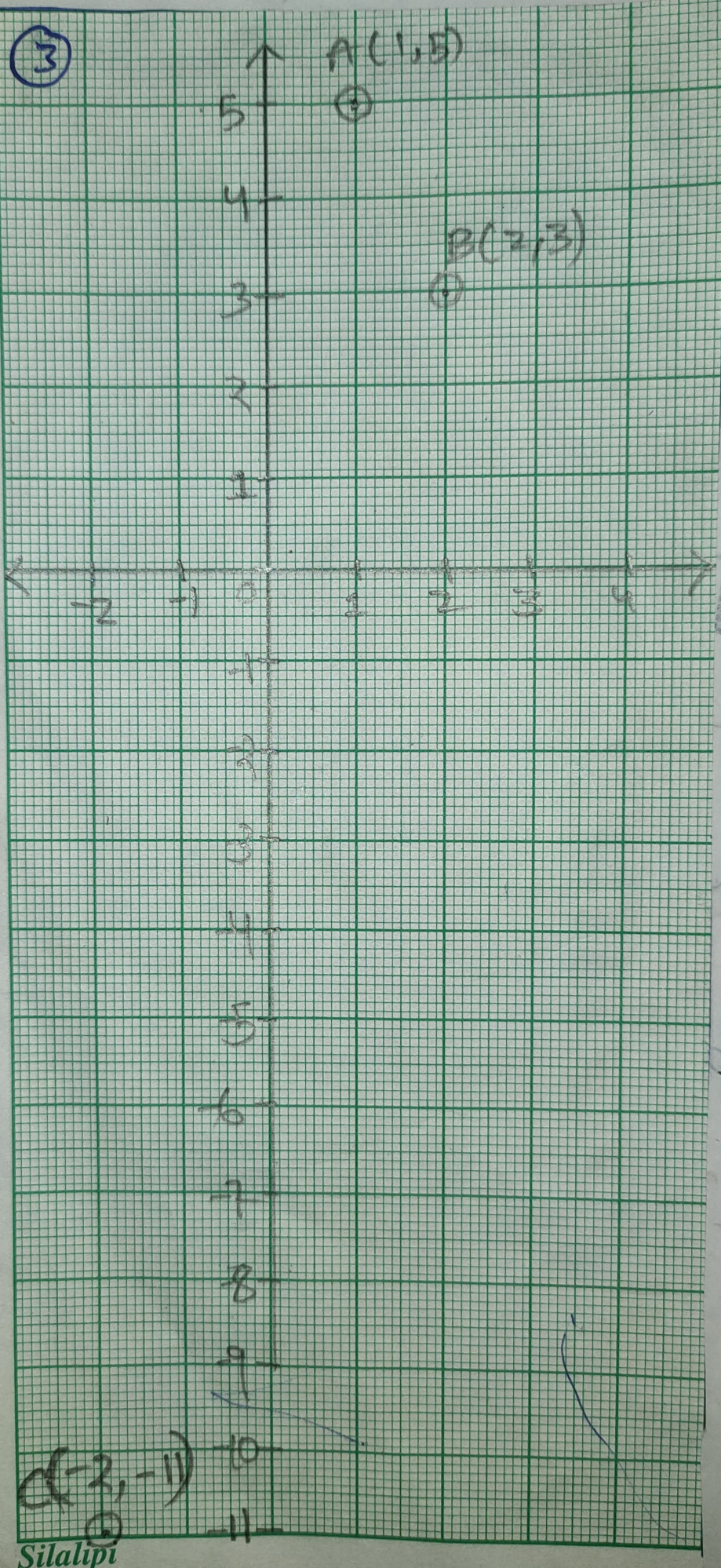
So, the distance between the two towns discussed in section 7.2 will be 39km, by distance formula.

(3)

As three points A(1,5), B(2,3) & C(-2,-11) all not meet at a linear line.

→ So, they are not collinear.

(3)



(4) We know that,

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

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

$$AB = \sqrt{1 + 36} = \sqrt{37}$$

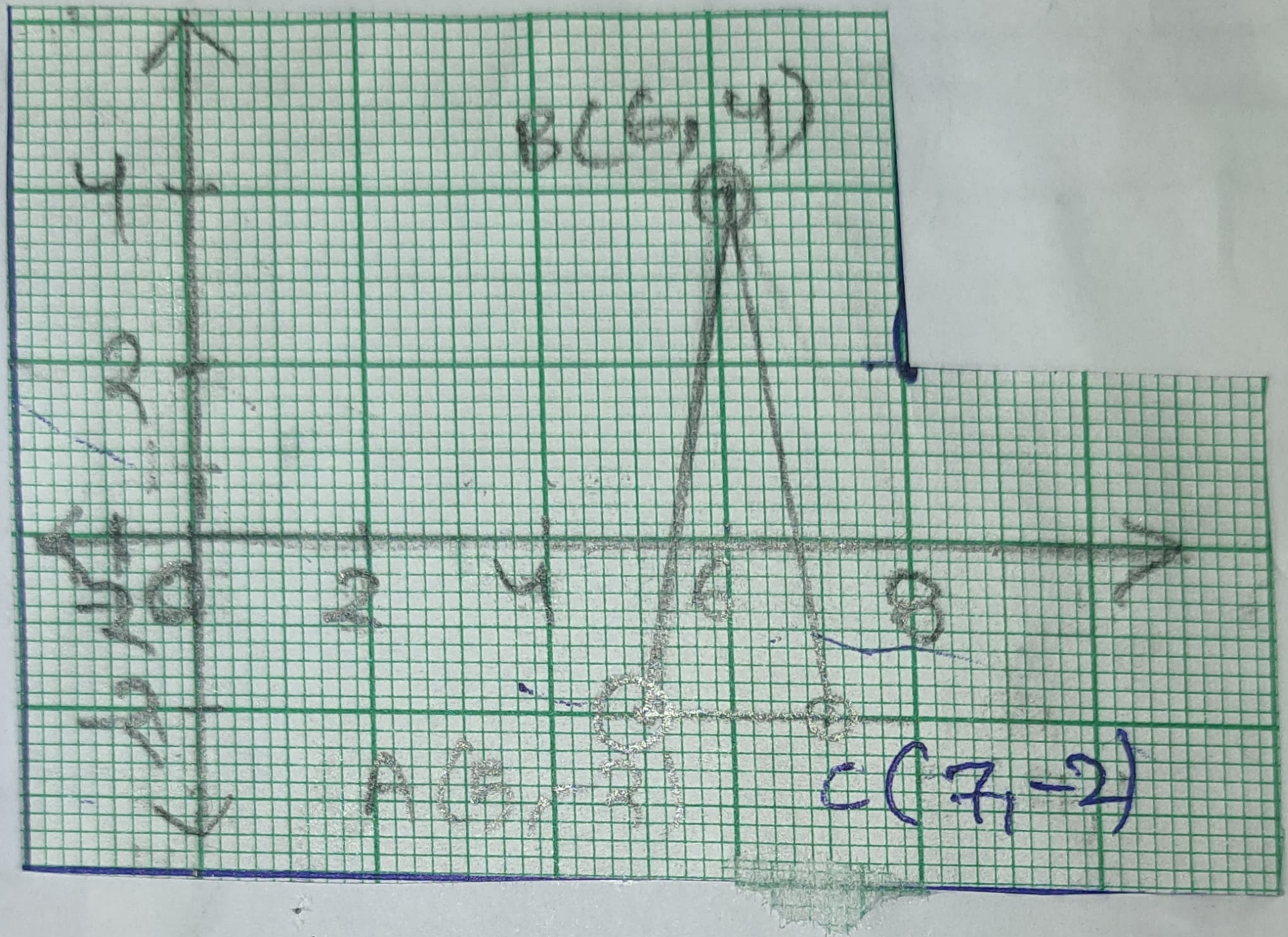
$$BC = \sqrt{(7-5)^2 + (-2+(-2))^2}$$

$$BC = \sqrt{1 + 36} = \sqrt{37}$$

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

$AC = \sqrt{2+16} = \sqrt{18}$

As, $AB = BC = \sqrt{37}$, &
$AC = \sqrt{18}$, we can say that it's vertices form an isoceles triangle.


B(6;4)
4
2
A
B
C(7;-2)