

Q4 If $(-6, -4)$, $(3, 5)$, $(7, 1)$ are vertices of a parallelogram, then the remaining vertex can be

(a) $(0, -1)$

(b) $(-1, 0)$

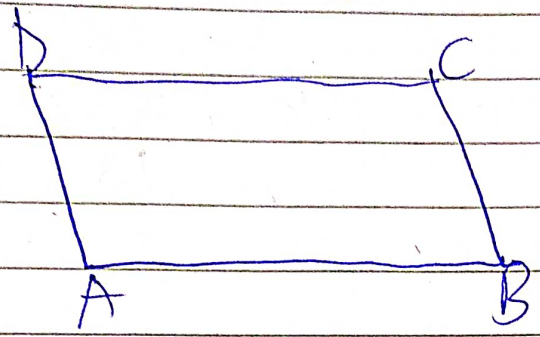
(c) $(-11, -8)$

(d) $(7, 10)$

Solⁿ

Vertices in a ||gm can have different cyclic orders.

eg.



let unknown vertex be (h, k)

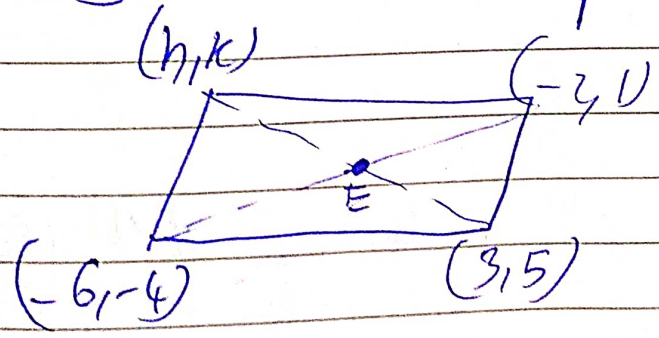
① $A B C D = (-6, -4), (3, 5), (-2, 1), (h, k)$

② $A B C D = (-6, -4), (3, 5), (h, k), (-2, 1)$

③ $A B C D = (-6, -4), (h, k), (3, 5), (-2, 1)$

All 3 cases are possible

Case ①

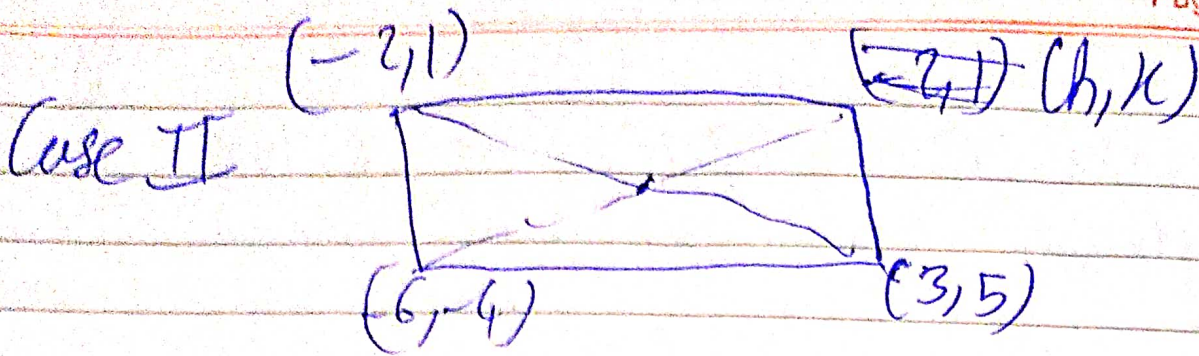


Since diagonals bisect each other
 E

$$E \Rightarrow \left(\frac{h+3}{2}, \frac{5+k}{2} \right) = \left(\frac{-6+2}{2}, \frac{-4+1}{2} \right)$$

$$h = -11, k = -8$$

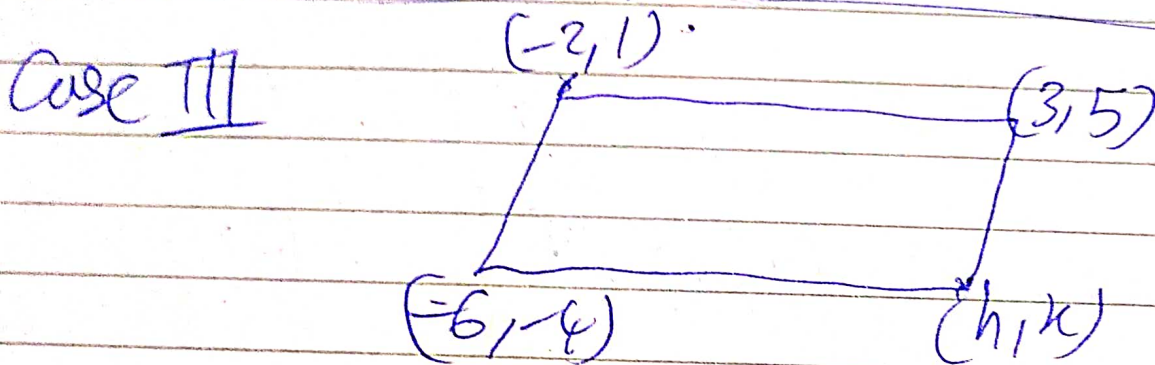
$$-15 + 20 = (-11, -8) \text{ in case ①}$$



Similarly

$$\begin{array}{l|l} h - 6 = -2 + 3 & k - 4 = 5 + 1 \\ h = 7 & k = 10 \end{array}$$

Case (2) $\equiv (-7, 10)$



$$\begin{array}{l|l} h - 2 = -6 + 3 & k + 1 = 5 - 4 \\ h = -1 & k = 0 \end{array}$$

Case (3) $\equiv (-1, 0)$

Hence total possible values of 4th vertex is 3 & i.e.

$$(7, 10), (-11, -8), (-1, 0)$$

Ans \Rightarrow (b) (c) (d)