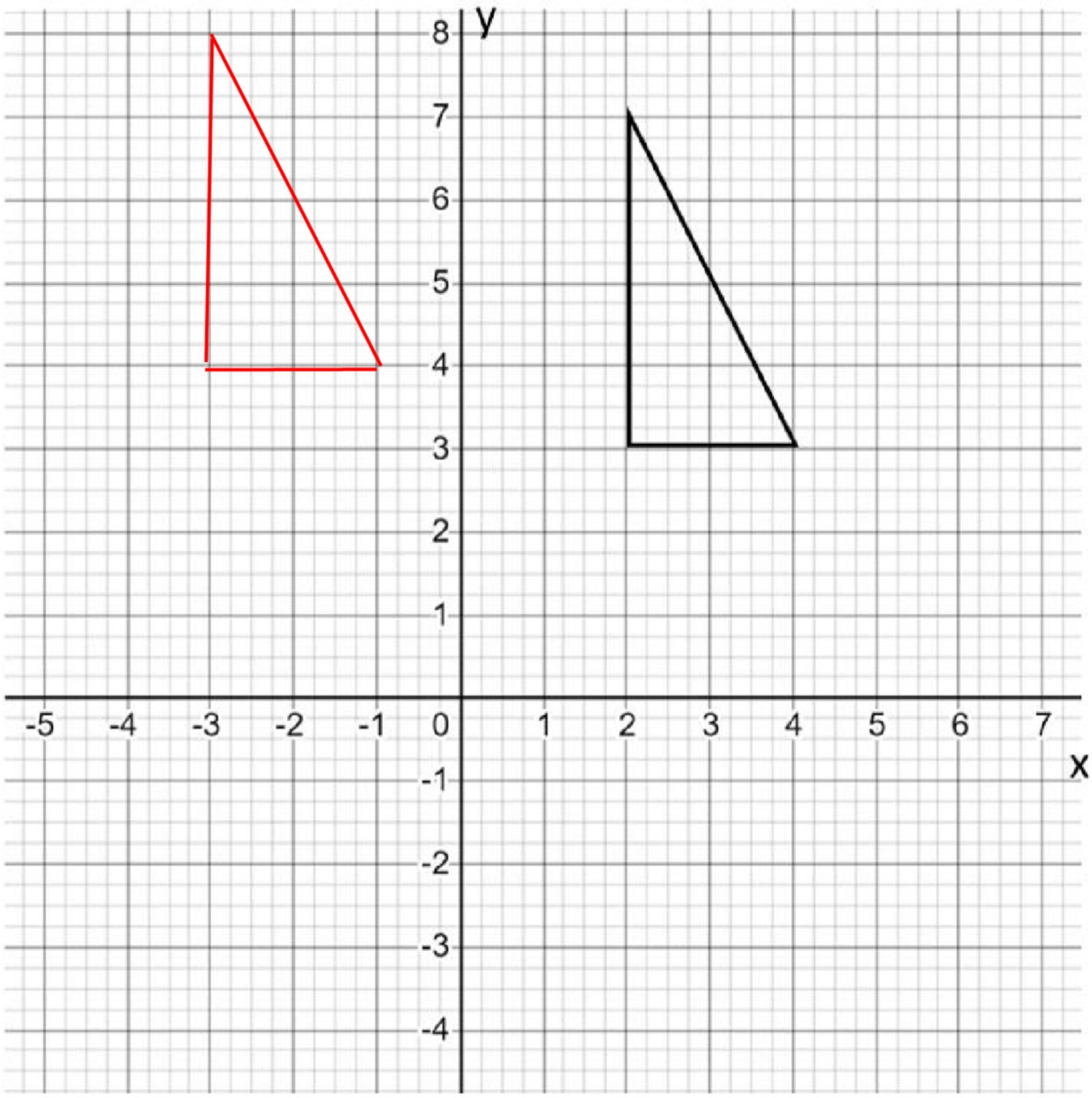
Translations Exam Practice

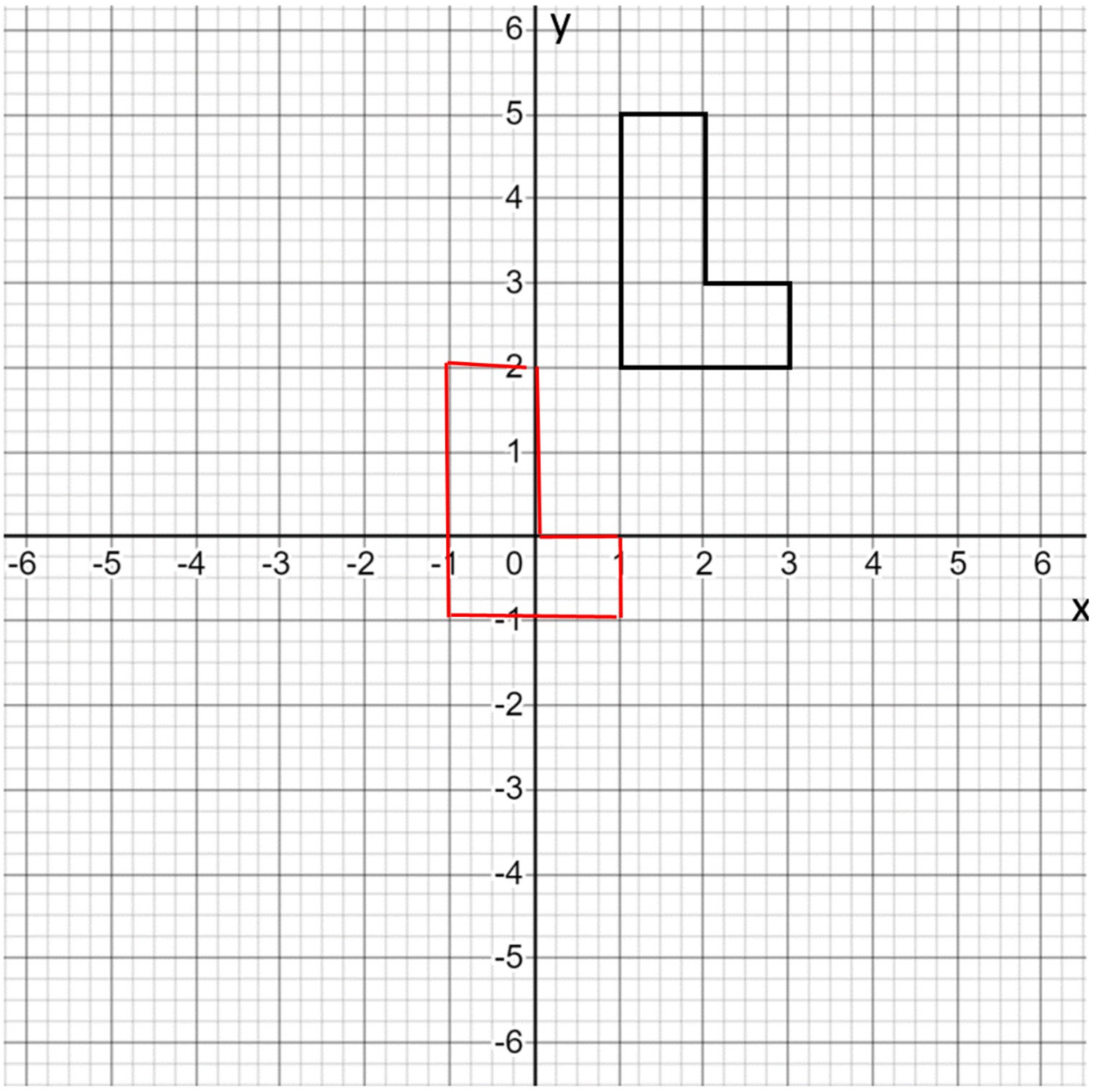
Q1. Translate the shape below by the vector $\begin{pmatrix} -5 \\ 1 \end{pmatrix}$.



Answer: _____

(2 marks)

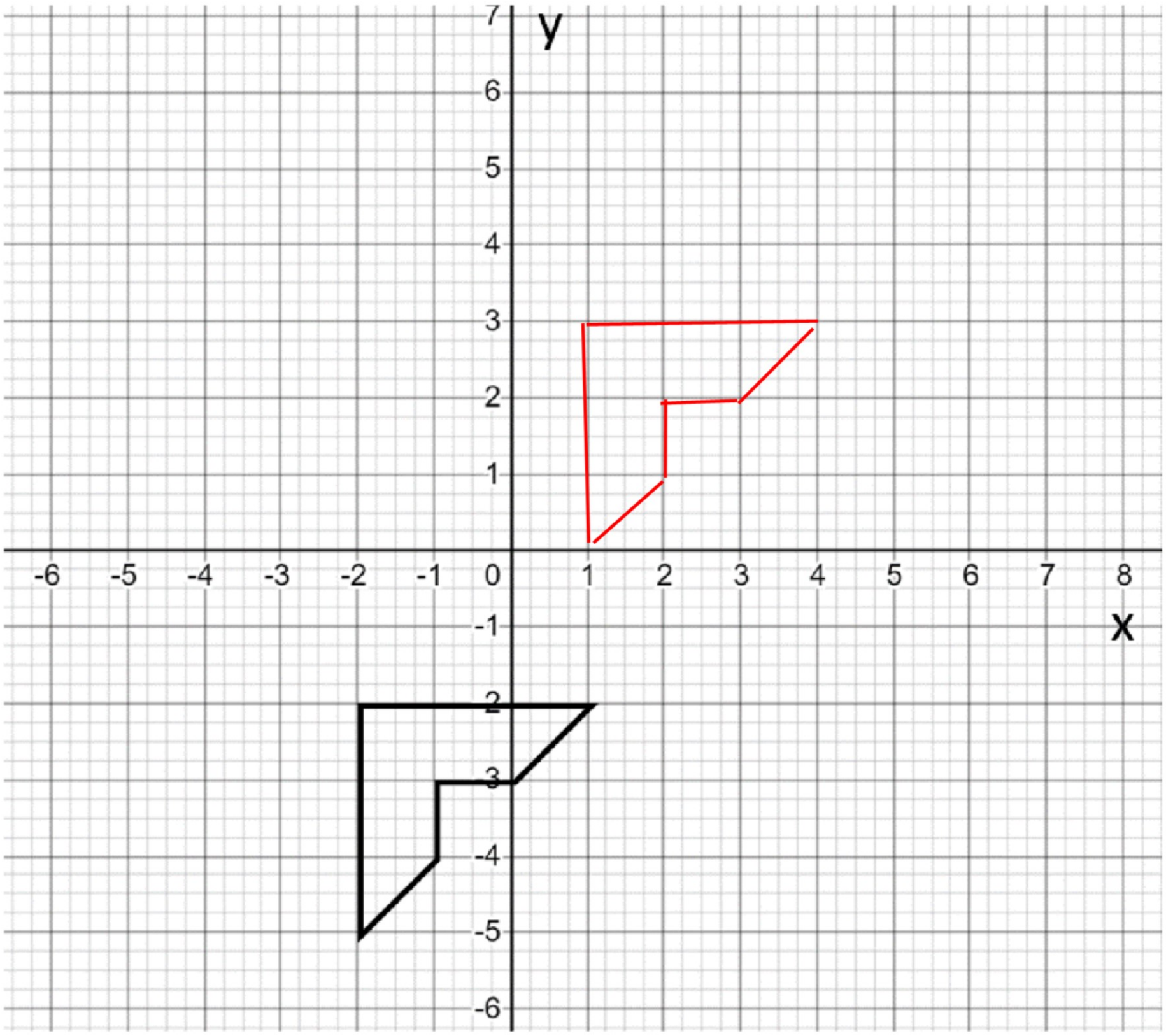
Q2. Translate the shape below by the vector $\begin{pmatrix} -2 \\ -3 \end{pmatrix}$



Answer: _____

(2 marks)

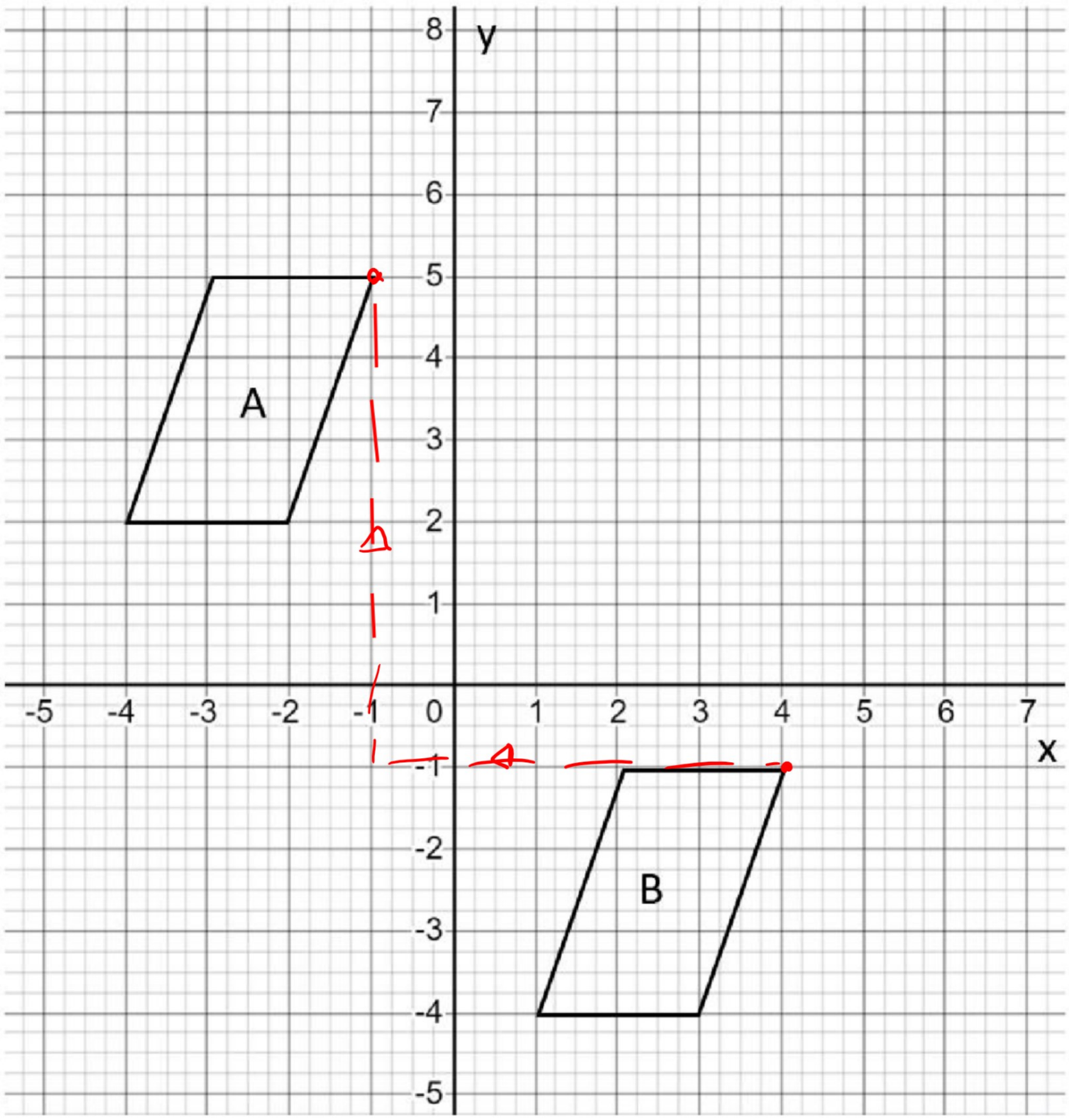
Q3. Translate the shape below by the vector $\begin{pmatrix} 3 \\ 5 \end{pmatrix}$



Answer: _____

(2 marks)

Q4. Describe fully the transformation which takes shape B to A.



Translation by $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$

Answer: Translation by $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$

(3 marks)

Q5. Shape B is a translation of shape A by the vector $\begin{pmatrix} 2 \\ -8 \end{pmatrix}$.

State fully the transformation which takes shape B to shape A.

Translation by $\begin{pmatrix} -2 \\ 8 \end{pmatrix}$

Answer: Translation by $\begin{pmatrix} 2 \\ -8 \end{pmatrix}$

(3 marks)

Q6. Shape Q is a translation of shape P by the vector $\begin{pmatrix} -4 \\ 0 \end{pmatrix}$ and shape R is a translation of shape Q by the vector $\begin{pmatrix} 9 \\ 5 \end{pmatrix}$.

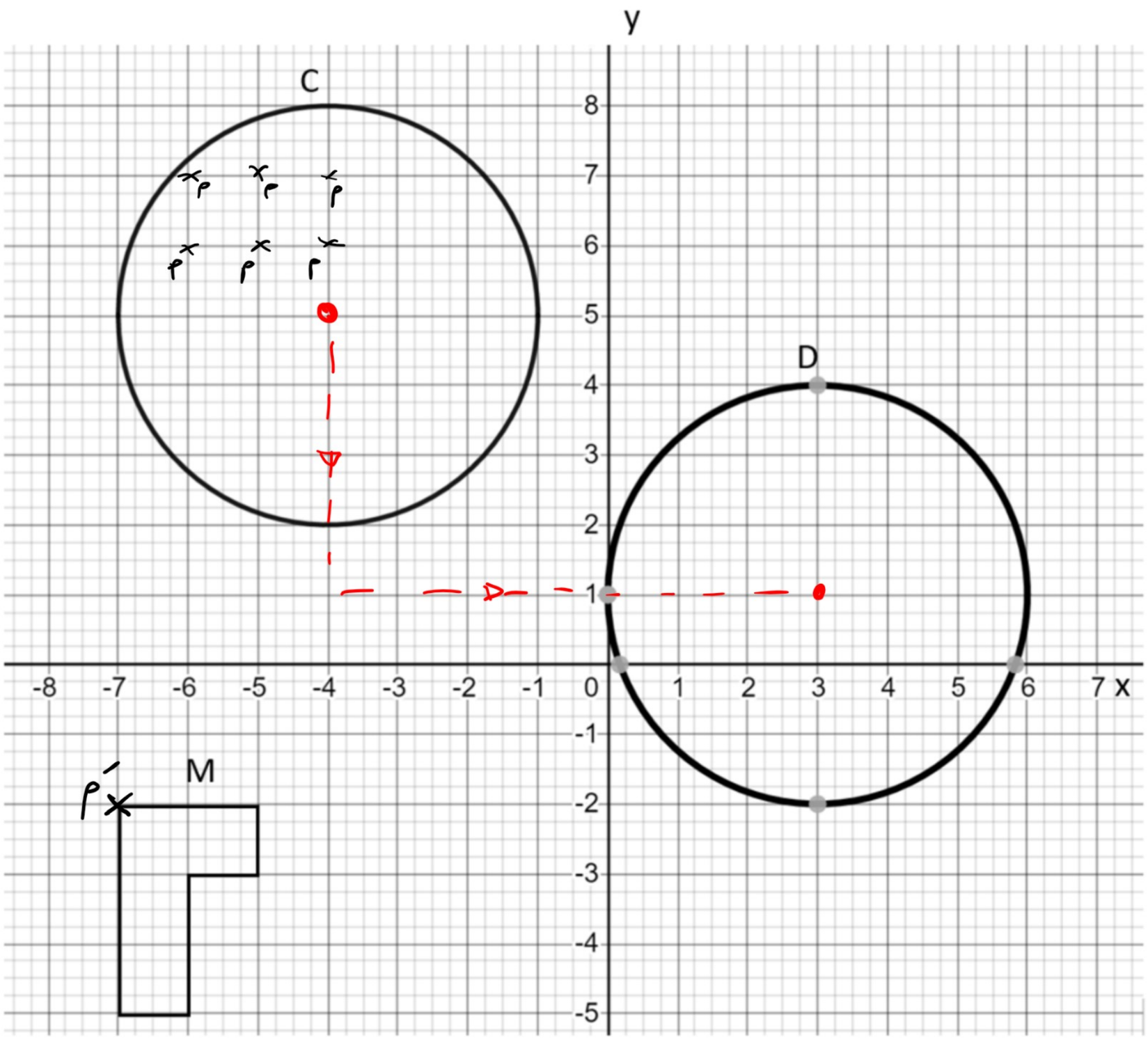
State fully the transformation which takes shape R to shape P.

Translation by $\begin{pmatrix} -5 \\ -5 \end{pmatrix}$

Answer: Translation by $\begin{pmatrix} -5 \\ -5 \end{pmatrix}$

(3 marks)

Q7. a) State fully the transformation which takes shape C to shape D



Translation by $\begin{pmatrix} 7 \\ -4 \end{pmatrix}$

Answer: Translation by $\begin{pmatrix} 7 \\ -4 \end{pmatrix}$

(3 marks)

(b) Shape M is to be translated by the vector $\begin{pmatrix} a \\ b \end{pmatrix}$ where a and b are whole numbers. State the number of possible translations there exists so that M will be remain completely inside shape C or D.

- There are 6 possible positions, marked P, which we can translate point P' on shape M, so M lies within Shape C.
- C and D are the same size, so there are therefore $6 \times 2 = 12$ possibilities.

Answer: 12

(2 marks)

Q8. Shape PQR is such that P = (4, -9), Q = (2, 3) and R = (-9, 12).

Pat wishes to transform Shape PQR by translating each point in turn to form shape STU.
His working is below. Given that he has made exactly one error, find it and correct it.

P: (4, -9) → S: (-3, -12) Q: (2, 3) → T: (9, 6) R: (-9, 12) → U: (-16, 9)

- P → S requires the vector $\begin{pmatrix} -7 \\ -3 \end{pmatrix}$ (✓)
- Q → T requires $\begin{pmatrix} 7 \\ 3 \end{pmatrix}$ (error)
- R → U requires $\begin{pmatrix} -7 \\ -3 \end{pmatrix}$ (✓)

⇒ T should be the result of applying $\begin{pmatrix} -7 \\ -3 \end{pmatrix}$ to the point Q(2,3)

⇒ T should be (-5, 0)

Answer: (-5, 0)

(2 marks)