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**3.** The triangle $T$ has vertices $A(2, 1)$, $B(2, 3)$ and $C(0, 1)$.

The triangle $T'$ is the image of $T$ under the transformation represented by the matrix

$$\mathbf{P} = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$$

(a) Find the coordinates of the vertices of $T'$

**(2)**

(b) Describe fully the transformation represented by **P**

**(2)**

The $2 \times 2$ matrix **Q** represents a reflection in the $x$-axis and the $2 \times 2$ matrix **R** represents a rotation through 90° anticlockwise about the origin.

(c) Write down the matrix **Q** and the matrix **R**

**(2)**

(d) Find the matrix **RQ**

**(2)**

(e) Give a full geometrical description of the single transformation represented by the answer to part (d).

**(2)**

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**Question 3 continued**

**(Total 10 marks)**

**Q3**