**Reflection and Rotation Matrices**

A triangle with coordinates (3,2), (5,2) and (3,6) is transformed by the matrix $\left(\begin{matrix}-1&0\\0&1\end{matrix}\right)$. By pre-multiplying, find the coordinates of the transformed triangle. Draw this transformation on a grid and hence describe it fully.

A triangle with coordinates (-3,2), (-5,2) and (-3,5) is transformed by the matrix $\left(\begin{matrix}0&1\\-1&0\end{matrix}\right)$. By pre-multiplying, find the coordinates of the transformed triangle. Draw this transformation on a grid and hence describe it fully.

A triangle with coordinates (2,3), (4,3) and (4,7) is transformed by the matrix $\left(\begin{matrix}0&-1\\-1&0\end{matrix}\right)$. By pre-multiplying, find the coordinates of the transformed triangle. Draw this transformation on a grid and hence describe it fully.

A triangle with coordinates (3,1), (5,1) and (3,5) is transformed by the matrix $\left(\begin{matrix}-1&0\\0&-1\end{matrix}\right)$. By pre-multiplying, find the coordinates of the transformed triangle. Draw this transformation on a grid and hence describe it fully.

The transformation matrix $\left(\begin{matrix}a&2\\-1&1\end{matrix}\right)$ maps the point $\left(3, 4\right)$ onto the point $\left(2,  b\right)$. Work out the values of $a$ and $b$.

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