

$$A(0,1) \rightarrow A(3,4)$$

$$\begin{pmatrix} 7/2 & 1/2 \\ -7/2 & 5/2 \end{pmatrix} \begin{pmatrix} 0 \\ 1 \end{pmatrix} + \begin{pmatrix} 5/2 \\ 3/2 \end{pmatrix} = \begin{pmatrix} 1/2 \\ 5/2 \end{pmatrix} + \begin{pmatrix} 5/2 \\ 3/2 \end{pmatrix} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$$

$$B(-1,0) \rightarrow B'(-1,5)$$

$$\begin{pmatrix} 7/2 & 1/2 \\ -7/2 & 5/2 \end{pmatrix} \begin{pmatrix} -1 \\ 0 \end{pmatrix} + \begin{pmatrix} 5/2 \\ 3/2 \end{pmatrix} = \begin{pmatrix} -7/2 \\ 7/2 \end{pmatrix} + \begin{pmatrix} 5/2 \\ 3/2 \end{pmatrix} = \begin{pmatrix} -1 \\ 5 \end{pmatrix}$$

d) Check

Coordinates of X' given by

$$B' + \frac{2}{3} \times \overrightarrow{AB'} = \begin{pmatrix} 3 \\ 4 \end{pmatrix} + \frac{2}{3} \begin{pmatrix} 5/2 - 3 \\ 3/2 - 4 \end{pmatrix} = \begin{pmatrix} 3 \\ 4 \end{pmatrix} + \begin{pmatrix} -1/3 \\ -5/3 \end{pmatrix} = \begin{pmatrix} 8/3 \\ 7/3 \end{pmatrix}$$