MATRIX TRANSFORMATIONS IN 2D
ANSWER SHEET

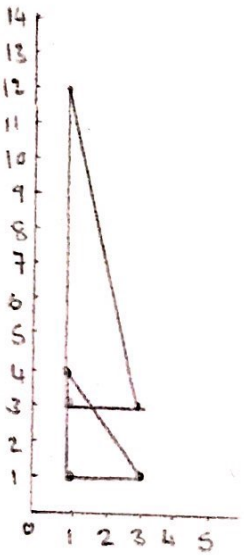
Exercise 1) a) $\begin{pmatrix} 1 & 0 \\ 0 & k \end{pmatrix}$

$\begin{pmatrix} 1 & 0 \\ 0 & 3 \end{pmatrix}$

$$\begin{pmatrix} 1 & 0 \\ 0 & 3 \end{pmatrix}\begin{pmatrix} 1 & 3 & 1 \\ 1 & 1 & 4 \end{pmatrix} = \begin{pmatrix} 1\times1+0\times1 & 1\times3+0\times1 & 1\times1+0\times4 \\ 0\times1+3\times1 & 0\times3+3\times1 & 0\times1+3\times4 \end{pmatrix}$$

$$= \begin{pmatrix} 1 & 3 & 1 \\ 3 & 3 & 12 \end{pmatrix} \quad (1,3)\ (3,3)\ (1,12)$$

b)



Exercise 2) a) $\begin{pmatrix} 1 & k \\ 0 & 1 \end{pmatrix} \rightarrow \begin{pmatrix} 1 & 1.5 \\ 0 & 1 \end{pmatrix}$

$$\begin{pmatrix} 1 & 1.5 \\ 0 & 1 \end{pmatrix}\begin{pmatrix} 0 & 3 & 0 & 3 \\ 0 & 0 & 3 & 3 \end{pmatrix}$$

$$= \begin{pmatrix} 1\times0+1.5\times0 & 1\times3+1.5\times0 & 1\times0+1.5\times3 & 1\times3+1.5\times3 \\ 0\times0+1\times0 & 0\times3+1\times0 & 0\times0+1\times3 & 0\times3+1\times3 \end{pmatrix} = \begin{pmatrix} 0 & 3 & 4.5 & 7.5 \\ 0 & 0 & 3 & 3 \end{pmatrix}$$

$(0,0)\quad (3,0)\quad (4.5,3)\quad (7.5,3)$

b)