

$\therefore$ The value of (x and y): $x = \begin{bmatrix} 5 & 0 \\ 1 & 4 \end{bmatrix}$ and $Y = \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$ (ans)

(d) Given,

$$A = \begin{bmatrix} 3 & 4 \\ 6 & 2 \end{bmatrix}$$

$$B = \begin{bmatrix} 7 & 8 \\ 4 & 3 \end{bmatrix}$$

$$\begin{aligned} \therefore A+B &= \begin{bmatrix} 3 & 4 \\ 6 & 2 \end{bmatrix} + \begin{bmatrix} 7 & 8 \\ 4 & 3 \end{bmatrix} \\ &= \begin{bmatrix} (3+7) & (4+8) \\ (6+4) & (2+3) \end{bmatrix} \\ &= \begin{bmatrix} 10 & 12 \\ 10 & 5 \end{bmatrix} \end{aligned}$$

$$\begin{aligned} \therefore A^T &= \begin{bmatrix} 3 & 4 \\ 6 & 2 \end{bmatrix}^T \\ &= \begin{bmatrix} 3 & 6 \\ 4 & 2 \end{bmatrix} \end{aligned}$$

$$\begin{aligned} \therefore B^T &= \begin{bmatrix} 7 & 8 \\ 4 & 3 \end{bmatrix}^T \\ &= \begin{bmatrix} 7 & 4 \\ 8 & 3 \end{bmatrix} \end{aligned}$$

$$\begin{aligned} \text{L.H.S} &= (A+B)^T \\ &= \begin{bmatrix} 10 & 12 \\ 10 & 5 \end{bmatrix}^T \\ &= \begin{bmatrix} 10 & 10 \\ 12 & 5 \end{bmatrix} \end{aligned}$$

$$\begin{aligned} \text{R.H.S} &= A^T + B^T \\ &= \begin{bmatrix} 3 & 6 \\ 4 & 2 \end{bmatrix} + \begin{bmatrix} 7 & 4 \\ 8 & 3 \end{bmatrix} \\ &= \begin{bmatrix} (3+7) & (6+4) \\ (4+8) & (2+3) \end{bmatrix} \\ &= \begin{bmatrix} 10 & 10 \\ 12 & 5 \end{bmatrix} \end{aligned}$$

$\therefore \text{L.H.S} = \text{R.H.S}$ [SHOWED]