SOLVING SIMULTANEOUS EQUATIONS USING 2x2 MATRICES : ANSWER SHEET

Exercise 1:

a) $\begin{pmatrix} 2 & -2 \\ -7 & 8 \end{pmatrix}\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

$$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{16-14}\begin{pmatrix} 3 \\ 2 \end{pmatrix}\begin{pmatrix} 8 & 2 \\ 7 & 2 \end{pmatrix}$$

$x = 1\frac{3}{4}$ $y = 12.5$

b) $\begin{pmatrix} 1 & 2 \\ 3 & -5 \end{pmatrix}\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$

$$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{-5-6}\begin{pmatrix} -5 & -2 \\ -3 & 1 \end{pmatrix}\begin{pmatrix} 4 \\ 1 \end{pmatrix}$$

$x = 2$ $y = 1$

Exercise 2:

a) $\begin{pmatrix} 2 & 4 \\ -3 & 1 \end{pmatrix}\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 2 \\ 11 \end{pmatrix}$

$$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{2+12}\begin{pmatrix} 1 & -4 \\ 3 & 2 \end{pmatrix}\begin{pmatrix} 2 \\ 11 \end{pmatrix}$$

$x = -3$

$y = 2$

b) $\begin{pmatrix} 1 & -1 \\ 2 & 1 \end{pmatrix}\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$

$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{1+2}\begin{pmatrix} 1 & 1 \\ -2 & 1 \end{pmatrix}\begin{pmatrix} -1 \\ 4 \end{pmatrix}$

$x = 1$

$y = 2$