12.11.3.3

Question : Find the Cartesian equation of the following planes:

1. $\mathbf{r}.\left(\hat{i} + \hat{j} - \hat{k}\right) = 2$

2. $\mathbf{r}.\left(2\hat{i} + 3\hat{j} - 4\hat{k}\right) = 1$

3. $\mathbf{r}.[(s - 2t)\,\hat{i} + (3 - t)\,\hat{j} + (2s + t)\,\hat{k}] = 15$

Solution :

1. $\begin{pmatrix} 1 & 1 & -1 \end{pmatrix} \mathbf{x} = 2$

2. $\begin{pmatrix} 2 & 3 & -4 \end{pmatrix} \mathbf{x} = 1$

3. $\begin{pmatrix} 2 & -5 & -1 \end{pmatrix} \mathbf{x} = 15$