Chapter Determinants Ex 6.3 Q13(i)

$$\text{Area} = \frac{1}{2}\begin{Vmatrix} k & 0 & 1 \\ 4 & 0 & 1 \\ 0 & 2 & 1 \end{Vmatrix}$$

$$\pm 4 = \frac{1}{2}\begin{vmatrix} k & 0 & 1 \\ 4 & 0 & 1 \\ 0 & 2 & 1 \end{vmatrix}$$

Expanding along $R_1$

$$\pm 8 = k(-2) - 0(4-0) + 1(8)$$

$$\pm 8 = -2k + 8$$

Taking positive $(+)$ sign

$$+8 = -2k + 8 \qquad \text{or } k = 0$$

Taking negative $(-)$ sign

$$-8 = -2k + 8 \qquad \text{or } k = 8$$

Hence $k = 0, 8$

Chapter Determinants Ex 6.3 Q13(ii)

$$4 = \frac{1}{2}\begin{Vmatrix} -2 & 0 & 1 \\ 0 & 4 & 1 \\ 0 & k & 1 \end{Vmatrix}$$

$$\pm 8 = \begin{vmatrix} -2 & 0 & 1 \\ 0 & 4 & 1 \\ 0 & k & 1 \end{vmatrix}$$

Expanding along $R_1$

$$\pm 8 = -2(4-k) - 0(0-0) + 1(0)$$

$$\pm 8 = -8 + 2k$$

Taking positive $(+)$ sign

$$+8 = -8 + 2k \qquad \text{or } k = 8$$

Taking negative $(-)$ sign

$$-8 = -8 + 2k \qquad \text{or } k = 0$$

Hence $k = 0, 8$

********** END **********