$$\vec{u} = (\hat{i}+5\hat{j}+8\hat{k}) \times (\hat{i}-\hat{j})$$

Computed 2 ways

$$\vec{u} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 1 & 5 & 8 \\ 1 & -1 & 0 \end{vmatrix} = \begin{vmatrix} 5 & 8 \\ -1 & 0 \end{vmatrix}\hat{i} - \begin{vmatrix} 1 & 8 \\ 1 & 0 \end{vmatrix}\hat{j} + \begin{vmatrix} 1 & 5 \\ 1 & -1 \end{vmatrix}\hat{k}$$

$$= (0+8)\hat{i} - (-8)\hat{j} + (-1-5)\hat{k}$$

Same answer

$$\vec{u} = (\hat{i}+5\hat{j}+8\hat{k}) \times \hat{i} - (\hat{i}+5\hat{j}+8\hat{k}) \times \hat{j}$$

$$\vec{u} = \cancel{\hat{i}\times\hat{i}}^{\vec{0}} + 5\hat{j}\times\hat{i} + 8\hat{k}\times\hat{i} - \left(\hat{i}\times\hat{j} + 5\cancel{\hat{j}\times\hat{j}}^{\vec{0}} + 8\hat{k}\times\hat{j}\right)$$

$$\vec{u} = 5(-\hat{k}) + 8\hat{j} - (\hat{k} + 8(-\hat{i}))$$

$$\vec{u} = -5\hat{k} + 8\hat{j} - \hat{k} + 8\hat{i} = 8\hat{i} + 8\hat{j} - 6\hat{k} = \langle 8, 8, -6 \rangle$$