**1.2.6** Find the vector product of the two vectors defined by $\mathbf{A} = 3\mathbf{u_x} + 4\mathbf{u_y} + 5\mathbf{u_z}$ and $\mathbf{B} = -5\mathbf{u_x} + 4\mathbf{u_y} - 3\mathbf{u_z}$. Check your answer using MATLAB.

The vector product of $\mathbf{A}$ and $\mathbf{B}$ is

$$\begin{aligned}\mathbf{A} \times \mathbf{B} &= (A_y B_z - A_z B_y)\mathbf{u_x} + (A_z B_x - A_x B_z)\mathbf{u_y} + (A_x B_y - A_y B_x)\mathbf{u_z} \\ &= (4 \cdot -3 - 5 \cdot 4)\mathbf{u_x} + (5 \cdot -5 - 3 \cdot -3)\mathbf{u_y} + (3 \cdot 4 - 4 \cdot -5)\mathbf{u_z} \\ &= -32\mathbf{u_x} - 16\mathbf{u_y} + 32\mathbf{u_z}.\end{aligned}$$