6.3.3

$$u = (1, -1, 0), \quad v = (1, 2, 0), \quad w = (1, 0, 3)$$

$$u \times v = \begin{bmatrix} 1 & -1 & 0 \\ 1 & 2 & 0 \end{bmatrix} \quad (0, 0, 3)$$

$$v \times u = \begin{bmatrix} 1 & 2 & 0 \\ 1 & -1 & 0 \end{bmatrix} = (0, 0, -3)$$

$$v \times w = \begin{bmatrix} 1 & -1 & 0 \\ 1 & 0 & 3 \end{bmatrix} = (-3, -3, 1)$$

$*$ 1 - symmetry $u \times v = -(v \times w)$
$(0, 0, 3) = -(0, 0, -3)$ Approved

$*$ 2 - Homogenity $2 u \times v = 2(u \times v)$
$2(0, 0, 3) = 2(0, 0, 3)$
$((0, 0, 6) = (0, 0, 6)$ Approved

$*$ 3 - lineraity $u \times (v + w) = (v \times u) + (v \times w)$

$$u \times (2, 2, 3)$$

$$\begin{bmatrix} 1 & -1 & 0 \\ 2 & 2 & 3 \end{bmatrix} = (-3, 3, 4)$$

$(u \times v) + (v \times w)$
$(0, 0, 3) + (-3, -3, 1) = (-3, -3, 4)$

So   Approved