3. Dados $v = (-1, 2, 0)$, $w = (2, -3, -1)$ y $u = (1, -1, 1)$, verificar que:

$$\langle 2v + 3w, -u \rangle = -2\langle v, u \rangle - 3\langle w, u \rangle$$

Calculo ambos miembros por separado:

$$\begin{aligned}\langle 2v+3w, -u \rangle &= \langle 2(-1,2,0) + 3(2,-3,-1), -(1,-1,1) \rangle \\ &= \langle (4,-5,-3), (-1,1,-1) \rangle \\ &= 4(-1) + (-5)1 + (-3)(-1) \\ &= \underbrace{-6}\end{aligned}$$

$$\begin{aligned}-2\langle v,u \rangle - 3\langle w,u \rangle &= -2\langle (-1,2,0), (1,-1,1) \rangle - 3\langle (2,-3,-1), (1,-1,1) \rangle \\ &= (-2)(-3) + (-3)4 \\ &= 6 - 12 = \underbrace{-6}\end{aligned}$$

Por lo tanto, $\langle 2v+3w, -u \rangle = -2\langle v,u \rangle - 3\langle w,u \rangle$