$$\langle v, u \rangle = \langle (4,5), (3,-2) \rangle$$
$$= (4)(3) + (5)(-2)$$
$$= 12 - 10$$
$$= 2$$
$$\langle u, v \rangle = \langle v, u \rangle$$

(b) $\langle u+v, w \rangle = \langle u, w \rangle + \langle v, w \rangle$

$$\langle u+v, w \rangle = \langle (3,-2) + (4,5), (-1,6) \rangle$$
$$= (3+4, -2+5), (-1,6)$$
$$= (7,3), (-1,6)$$
$$= (7)(-1) + (3)(6)$$
$$= -7 + 18$$
$$= 11$$

(c)

$$\langle u, w \rangle + \langle v, w \rangle = \langle (3,-2), (-1,6) \rangle + \langle (4,5), (-1,6) \rangle$$
$$= (3)(-1) + (-2)(6) + (4)(-1) + (5)(6)$$
$$= (-3 - 12) + (-4 + 30)$$
$$= (-15) + (26)$$
$$= -15 + 26$$
$$= 11$$
$$\langle u+v, w \rangle = \langle u, w \rangle + \langle v, w \rangle$$