Commutative and Distributive Properties

Using the definition of the dot product $\boldsymbol{A} \cdot \boldsymbol{B} = A_1 B_1 + A_2 B_2 + A_3 B_3$, prove that

(a) $\boldsymbol{A} \cdot \boldsymbol{B} = \boldsymbol{B} \cdot \boldsymbol{A}$;

(b) $\boldsymbol{A} \cdot (\boldsymbol{B} + \boldsymbol{C}) = \boldsymbol{A} \cdot \boldsymbol{B} + \boldsymbol{A} \cdot \boldsymbol{C}$;

(c) $\boldsymbol{A} \cdot (k\boldsymbol{B}) = (k\boldsymbol{A}) \cdot \boldsymbol{B} = k(\boldsymbol{A} \cdot \boldsymbol{B})$.