Visual Dot Product Practice

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This material is borrowed/adapted from Chapter 9 of the *Student Workbook* for *Physics for Scientists and Engineers.*

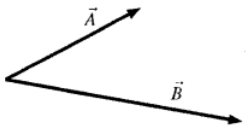
XX-1: Visual Dot Product Practice

(a) If $\vec{A} \cdot \vec{B} = 0$, can you conclude that one of the vectors has zero magnitude? Explain.

No. The vectors $\vec{A}$ and $\vec{B}$ could be perpendicular to each other.

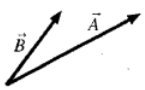
(b) For each pair of vectors, is the sign of $\vec{A} \cdot \vec{B}$ positive (+), negative (−), or zero (0)?

a.



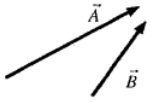
Sign = +

b.



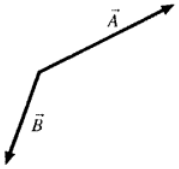
Sign = +

c.



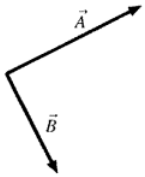
Sign = +

d.



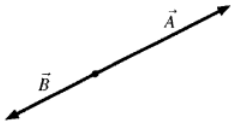
Sign = −

e.



Sign = 0

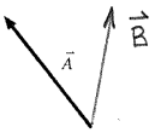
f.



Sign = −

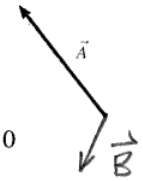
(c) Each of the diagrams below shows a vector $\vec{A}$. Draw and label a vector $\vec{B}$ that will cause $\vec{A} \cdot \vec{B}$ to have the sign indicated.

a.



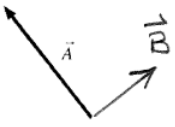
$\vec{A} \cdot \vec{B} > 0$

b.



$\vec{A} \cdot \vec{B} < 0$

c.



$\vec{A} \cdot \vec{B} = 0$