

# Math 3113 - Multivariable Calculus

Quiz #2 - 2006.01.27

Solutions

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Let  $\vec{a} = \langle 3, 2, 4 \rangle$ ,  $\vec{b} = \langle 1, -2, -3 \rangle$  and  $\vec{c} = \vec{a} \times \vec{b}$ .

1. What are the actual values of the components of the vector  $\vec{c}$ ?

Using the definition of the cross product, one has

$$\vec{c} = \langle 2, 13, -8 \rangle.$$

2. Compute  $|\vec{b}|$ .

$$|\vec{b}| = \sqrt{1 + 4 + 9} = \sqrt{14}.$$

3. Compute  $\vec{a} \cdot \vec{c}$ .

$$\vec{a} \cdot \vec{c} = 0$$

4. Does your answer to problem 3 agree with your answer to problem 1? Explain your answer.

Yes it does. By definition of the cross product,  $\vec{a} \perp \vec{c}$ . Therefore,  $\vec{a} \cdot \vec{c} = 0$ .