

## #4 Scalar and Vector Multiplication of Vectors Post-class

Due: 11:00am on Wednesday, August 29, 2012

**Note:** You will receive no credit for late submissions. To learn more, read your instructor's [Grading Policy](#)

### Exercise 1.55

Find the angle between each of the following pairs of vectors  $\vec{A} = A_x\hat{i} + A_y\hat{j}$  and  $\vec{B} = B_x\hat{i} + B_y\hat{j}$ .

#### Part A

$$A_{x1} = -3.80, A_{y1} = 7.20; B_{x1} = 2.60, B_{y1} = -2.30.$$

ANSWER:

159 °

**Correct**

#### Part B

$$A_{x2} = 3.40, A_{y2} = 4.80; B_{x2} = 10.4, B_{y2} = 5.00.$$

ANSWER:

29.0 °

**Correct**

**Part C**

$$A_{x3} = -4.00, A_{y3} = 2.00; B_{x3} = 7.00, B_{y3} = 14.00.$$

ANSWER:

90 °

**Correct****Exercise 1.54****Part A**

Given two vectors  $\vec{A} = 4.20 \hat{i} + 3.40 \hat{j}$  and  $\vec{B} = 5.80 \hat{i} - 2.60 \hat{j}$ , find the scalar product of the two vectors  $\vec{A}$  and  $\vec{B}$ .

ANSWER:

$$\vec{A} \cdot \vec{B} = 15.5$$

**Correct****Part B**

Find the angle between these two vectors.

ANSWER:

$$\theta = 63.1 ^\circ$$

Correct

## Exercise 1.58

### Part A

Given two vectors  $\vec{A} = 4.00\hat{i} + 3.00\hat{j}$  and  $\vec{B} = 5.00\hat{i} - 2.00\hat{j}$ , find the vector product  $\vec{A} \times \vec{B}$  (expressed in unit vectors).

ANSWER:

$$\vec{A} \times \vec{B} = -23\hat{k}$$

Correct

### Part B

What is the magnitude of the vector product?

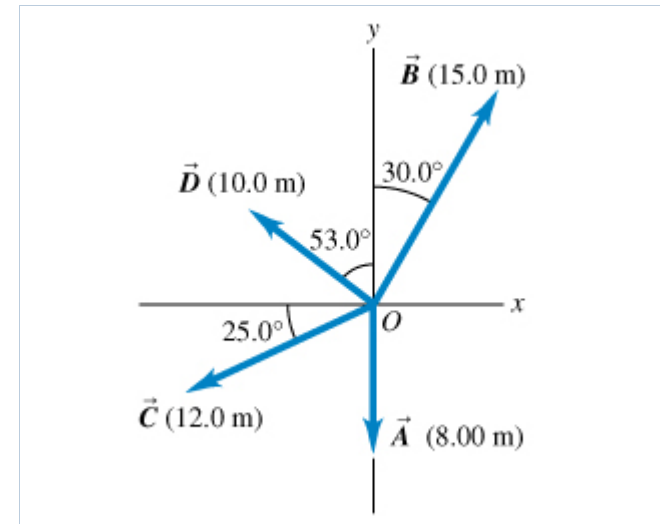
ANSWER:

$$|\vec{A} \times \vec{B}| = 23.0$$

Correct

## Exercise 1.47

Write each vector in the figure in terms of the unit vectors  $\hat{i}$  and  $\hat{j}$ .



### Part A

ANSWER:

$$\vec{A} = 0\hat{i} - 8\hat{j}$$

Correct

### Part B

ANSWER:

$$\vec{B} = 7.5\hat{i} + 13\hat{j}$$

**Correct**

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**Part C**

ANSWER:

$$\vec{C} = -10.9\hat{i} - 5\hat{j}$$

**Correct**

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**Part D**

ANSWER:

$$\vec{D} = -8\hat{i} + 6\hat{j}$$

**Correct**

**Score Summary:**

Your score on this assignment is 99.3%.  
You received 39.7 out of a possible total of 40 points.