1. Write the following combination of vectors as a single vector.
\[ \vec{SQ} + \vec{QR} \]

2. Determine whether each expression is meaningful. Match the expression with the correct description.

- \[ (\vec{b} \cdot \vec{j}) \times (\vec{d} \cdot \vec{h}) \]  
  - meaningful, vector  
  - meaningless

3. Find \( |\vec{u} \times \vec{v}| \) correct to three decimal places where \( |\vec{u}| = 8, |\vec{v}| = 9, \theta = 65^\circ \).

   a. 65.254  
   b. 70.254  
   c. 7.250  
   d. 30.429  
   e. 8.157

4. The figure shows a vector \( \vec{a} \) in the \( xy \) plane and a vector \( \vec{b} \) in the direction of \( \vec{k} \). Their lengths are \( |\vec{a}| = 9 \) and \( |\vec{b}| = 6 \).

\[ \vec{a} \times \vec{b} \]

   a. 52.108  
   b. 9.168  
   c. 2.361  
   d. 54  
   e. 1.574

5. Choose the parametric equations that correspond to the given graph.

   a. \[ x = t, y = \cos 8t, z = \sin 8t \]  
   b. \[ x = \cos 8t, y = t, z = \sin 8t \]  
   c. \[ x = \cos 8t, y = \sin 8t, z = t \]
1. SR
2. \( b \cdot (d \times h) \rightarrow \text{meaningful, scalar,} \)
   \( (b \cdot j) \times (d \cdot h) \rightarrow \text{meaningless} \)
3. a
4. d
5. a
6. c
1. Write the following combination of vectors as a single vector.

\[ \vec{SQ} + \vec{QR} \]

2. Determine whether each expression is meaningful. Match the expression with the correct description.

- \[ \mathbf{x} \cdot (\mathbf{f} \times \mathbf{z}) \]
  - meaningful, vector
- \[ \mathbf{x} \cdot (\mathbf{f} \times \mathbf{z}) \]
  - meaningless

3. Find \[ |\mathbf{u} \times \mathbf{v}| \] correct to three decimal places where \[ |\mathbf{u}| = 1, |\mathbf{v}| = 2, \angle \theta = 65^\circ \].

   a. 1.813   b. 0.906   c. 6.813   d. 1.813   e. 0.845

4. The figure shows a vector \( \mathbf{a} \) in the \( xy \) plane and a vector \( \mathbf{b} \) in the direction of \( \mathbf{k} \). Their lengths are \( |\mathbf{a}| = 10 \) and \( |\mathbf{b}| = 1 \).

Find \[ |\mathbf{a} \times \mathbf{b}| \].

   a. 10   b. 9.454   c. 0.945   d. 3.258   e. 14.454

5. Choose the parametric equations that correspond to the given graph.

   a. \[ x = t, y = \cos 6t, z = \sin 6t \]   b. \[ x = \cos 6t, y = \sin 6t, z = t \]
   c. \[ x = \cos 6t, y = t, z = \sin 6t \]

6. Find a vector function that represents the curve of intersection of the two surfaces: the paraboloid \( z = 9x^2 + y^2 \) and the parabolic cylinder \( y = x^2 \).

Select the correct answer.

   a. \[ \mathbf{r}(t) = t \mathbf{i} + t \mathbf{j} + (9t^2 + t^2) \mathbf{k} \]   b. \[ \mathbf{r}(t) = t \mathbf{i} + t^2 \mathbf{j} + (9t^2 + t^4) \mathbf{k} \]
   c. \[ \mathbf{r}(t) = 9t^2 \mathbf{i} + t \mathbf{j} + (9t^2 + t) \mathbf{k} \]   d. \[ \mathbf{r}(t) = t \mathbf{i} + t^2 \mathbf{j} + (9t + t^2) \mathbf{k} \]
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<td>1.</td>
<td>SR</td>
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| 2. | $x \cdot (f \cdot z) \rightarrow$ meaningful, scalar, 
    |  $(x \cdot j) \cdot (f \cdot z) \rightarrow$ meaningless |
| 3. | d |
| 4. | a |
| 5. | a |
| 6. | b |