

## Answer on Question # 52233 – Math – Vector Calculus

1. What does  $i, j$  denote .....

- a. column
- b. unit vector
- c. scalar
- d. matrix

**Answer: b. unit vector**

2. Represent the given velocity 230 km/h in the direction  $200^\circ$

- a. 7 cm
- b. 5 cm
- c. 14 cm
- d. 10 cm

**Answer: None of the above**

We should find coordinates  $(v_x, v_y)$  of its end. By definition  $v_x = v \cos \alpha$ ,  $v_y = v \sin \alpha$ .

Substituting values we get  $v_x = v \cos \alpha = 230 * \cos 200^\circ = 230 * (-0.93969) = -216.13 \text{ km/h} = -216.13 * 1000 \text{ m} / (3600 \text{ s}) = -60.04 \text{ m/s}$ ,

$v_y = v \sin \alpha = 230 * \sin 200^\circ = 230 * (-0.34202) = -78.665 \text{ km/h} = -78.665 * 1000 \text{ m} / (3600 \text{ s}) = -21.85 \text{ m/s}$ .

Thus,  $v = (-216.13 \text{ km/h}, -78.665 \text{ km/h})$ .

3. A negative vector could be denoted as .....

- a.  $w, w$
- b.  $a, b$
- c.  $u, v$
- d.  $u, -u$

**Answer: d.  $u, -u$**

4. The sum of a vector and the negative of another vector could be written as .....

- a.  $w+w$
- b.  $w+(-w)$
- c.  $w$
- d. None of the above

**Answer: d. None of the above**

5. What type of vector is  $w+(-w)=0$

- a. null vector
- b. scalar vector
- c. vector
- d. magnitude

**Answer: a. null vector**