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| **Mathematics for Data Science 2023/24** |

**Week- Linear Algebra – Vector and vector operations**

**Answer the following questions**

**State whether true or false.**

1. Vector is a quantity with only magnitude. (T/ F) False

2. The origin of the cartesian plane is at (1,1). (T/F) False

3. 2 important characteristics of vectors are dimensionality and orientation. (T/F) True

4. A vector can have more than 1 dimensions. (T/F) True

Solve the following questions.

1. Calculate a + b, if

Diagram

Description automatically generated

Solution:

Text

Description automatically generated

2. Calculate 3*u, if*

Diagram

Description automatically generated with low confidence

Solution:

A picture containing shape

Description automatically generated

3. Vector v→ has a value of [1, 2] but then a transformation happens. i^ lands at [2, 0] and  j^ lands at [0, 1.5]. Where does v→ land?

Solution: Vector lands on [2, 3]

4. Vector v→ has a value of [1, 2] but then a transformation happens. i^ lands at [-2, 1] and  j^ lands at [1, -2]. Where does v→ land?

Solution: Vector lands on [0, -3]