

Wisdom Friday Johng

Civil Engineering

19/ENAO3/015

MAT 102 Assignment

Answers

$$A = 3i + 4j - 6k, \quad B = 5i - 11j + 2k, \quad C = 7i - 7j + k$$

1.)  $A \cdot C + B \cdot C$

$$A \cdot C = (3i + 4j - 6k) \cdot (7i - 7j + k)$$

$$A \cdot C = 21 - 28 - 6 \Rightarrow -13$$

$$B \cdot C = (5i - 11j + 2k) \cdot (7i - 7j + k)$$

$$B \cdot C = 35 + 77 + 2 \Rightarrow 114$$

$$\therefore A \cdot C + B \cdot C \Rightarrow (-13 + 114) = 101$$

2.)  $(A - B) \cdot C$

$$A - B = (3i + 4j - 6k) - (5i - 11j + 2k)$$

$$A - B = -2i + 15j - 8k$$

$$(A - B) \cdot C = (-2i + 15j - 8k) \cdot (7i - 7j + k)$$

$$\therefore (A - B) \cdot C = (-14 - 105 - 8) = 127$$

3.)  $A \cdot (B \times C)$

$B \times C =$	$i$	$j$	$k$
	5	-11	2
	7	-7	1

$$i(-11 + 14) - j(5 - 14) + k(-35 + 77)$$

$$B \times C = 3i + 9j + 42k$$

$$A \cdot (B \times C) = (3i + 4j - 6k) \cdot (3i + 9j + 42k)$$

$$A \cdot (B \times C) = 9 + 36 - 252$$

$$\therefore A \cdot (B \times C) = 207$$