

$$3B = 3(3i - 2j + k)$$

$$= 9i - 6j + 3k$$

$$\begin{vmatrix} i & j & k \\ 2 & -4 & 0 \\ 9 & -6 & 3 \end{vmatrix}$$

$$i = \begin{vmatrix} -4 & 0 \\ -6 & 3 \end{vmatrix} - j = \begin{vmatrix} 2 & 0 \\ 9 & 3 \end{vmatrix} + k = \begin{vmatrix} 2 & -4 \\ 9 & -6 \end{vmatrix}$$

$$i = (12 - 0) - j = (6 - 0) + k = (-12 - 38)$$

$$= 12i - 6j + 24k$$

$$A \times (2C \times 3B)$$

$$\begin{vmatrix} i & j & k \\ 4 & -4 & -2 \\ -12 & -6 & 24 \end{vmatrix}$$

$$i = \begin{vmatrix} -4 & -2 \\ -6 & 24 \end{vmatrix} - j \begin{vmatrix} 4 & -2 \\ -12 & 24 \end{vmatrix} + k = \begin{vmatrix} 4 & -4 \\ -12 & 6 \end{vmatrix}$$

$$i = (24 - 12) - j = (96 - 24) + k = (24 - 12)$$

$$= 12i - 72j + 12k$$

$$2) A = pi - 6j - 3k$$

$$B = 4i + 3j - k$$

$$C = i - 3j + 2k$$

$$\begin{array}{c|ccc|cc} & i & j & k & & \\ \hline & p & -6 & -3 & p & -6 \\ & 4 & 3 & -1 & 4 & 3 \\ & 1 & -3 & 2 & 1 & -3 \end{array}$$

$$(6p + 6 + 36) - (-9 + 3p - 48)$$

$$6p + 42 + 51 - 3p$$

$$3p + 99 = 0$$

$$3p = -99$$

$$p = \frac{-99}{3}$$

3

$$p = -33$$

Name Igwilo Tobechukwu

Matric No. 191ang021024

Dept Computer Engineering

1)  $A = 4i + j - 2k$

$$B = 3i - 2j + k$$

$$C = i - 2k$$

a)  $(A - 2B) \times C$

$$\begin{aligned} A - 2B &= (4i + j - 2k) - 2(3i - 2j + k) \\ &= 4i + j - 2k - 6i + 4j - 2k \\ &= -2i + 5j - 4k \end{aligned}$$

$(A - 2B) \times C$

$$\begin{array}{c|ccc} & i & j & k \\ \hline & -2 & 5 & -4 \\ \hline & 1 & -2 & 0 \end{array}$$

$$i = \begin{vmatrix} 5 & -4 \\ -2 & 0 \end{vmatrix} \quad -j = \begin{vmatrix} -2 & -4 \\ 1 & 0 \end{vmatrix} \quad +k = \begin{vmatrix} -2 & 5 \\ 1 & -2 \end{vmatrix}$$

$$\begin{aligned} i &= (0 - 8) \quad -j = (0 + 4) \quad +k = (4 - 6) \\ &= -8i - 4j - k \end{aligned}$$

b)  $A \times (2C \times 3B)$

$(2C \times 3B)$

$$\begin{aligned} 2C &= 2(i - 2k) \\ &= 2i - 4k \end{aligned}$$