

Agadosy Steven

14/ENG06/003

Mat 102 Assignment

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

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

$$C = i - 2k$$

$$a. (A - 2B) \times C = 4i + j - 2k$$

$$-6i + 4j - 2k$$

$$10i - 3j \times i - 2k$$

$$\therefore (A - 2B) \times C = \begin{matrix} i & j & k \\ 10 & -3 & 0 \\ 1 & 0 & -2 \end{matrix}$$

$$1 \quad 0 \quad -2$$

$$(A - 2B) \times C = (6 - 0)i - (-20 - 0)j + k(0 - -3)$$

$$= 6i + 20j + 3k$$

$$b. A \times (2C \times 3B) = 4i + j - 2k (2i - 4k \times 9i - 6j + 3k)$$

$$\text{So } (2C \times 3B) = \begin{matrix} i & j & k \\ 2 & -4 & 0 \\ 9 & -6 & 3 \end{matrix}$$

$$9 \quad -6 \quad 3$$

$$(-12 - 0)i - (6 - 0)j + k(-12 - 36)$$

$$2C \times 3B = -12i - 6j - 48k \text{ or } -2i - j - 8k$$

$$A \times (2C \times 3B) = \begin{matrix} i & j & k \\ 4 & 1 & -2 \\ -12 & -6 & -48 \end{matrix}$$

$$-12 \quad -6 \quad -48$$

$$(48 - 12)i - (-192 - +24)j + 12(-24 - -12)$$

$$A \times (2C \times 3B) = 36i + 168j - 12k$$

$$2. A = p_i - 6j - 3k$$

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

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

$$\begin{vmatrix} p & -6 & -3 \\ 4 & 3 & -1 \\ 1 & -3 & 2 \end{vmatrix} = 0$$

$$p \begin{vmatrix} 3 & -1 \\ -3 & 2 \end{vmatrix} + 6 \begin{vmatrix} 4 & -1 \\ 1 & 2 \end{vmatrix} - 3 \begin{vmatrix} 4 & 3 \\ 1 & -3 \end{vmatrix} = 0$$

$$p(6 - 3) + 6(8 - -1) - 3(-12 - 3) = 0$$

$$3p + 54 + 45 = 0$$

$$3p + 99 = 0$$

$$\therefore 3p = -99$$

$$p = \frac{-99}{3} = -33$$