

MATHS Assignment

① a)  $(A - 2B) \times C$

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

$$\begin{aligned} (A - 2B) &= (4i + j - 2k) - (6i - 4j + 2k) \\ &= (4i - 6i) + (1j + 4j) + (-2k - 2k) \\ &= -2i + 5j - 4k \end{aligned}$$

$$(A - 2B) \times C = \begin{vmatrix} i & -j & k \\ -2 & 5 & -4 \\ 1 & 0 & -2 \end{vmatrix}$$

$$\begin{aligned} &= i(-10 + 0) - j(-4 + 4) + k(0 - 5) \\ &= -10i - 5k \end{aligned}$$

② coplanar vectors  $A \cdot (B \times C) = 0$

$$A \cdot (B \times C) = \begin{vmatrix} p & -6 & -3 \\ 4 & 3 & -1 \\ 1 & -3 & 2 \end{vmatrix} = 0$$

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

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

$$3p + 99 = 0$$

$$3p = -99$$

$$p = -33 //$$