

# IFEOLUKA PROMISE.

19/ENG02/021

COMPUTER ENGINEERING.  
MAT 102.

SN: 182.

①  $A = 4i + j - 2k$     $B = 3i - 2j + k$

$C = i - 2k$

Ⓐ  $(A - 2B) \times C$

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

$(4i + j - 2k) - (6i - 4j + 2k)$   
 $(-2i + 5j - 4k)$

$(A - 2B) \times C = (-2i + 5j - 4k) \times (i - 2k)$

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

$i(-10 - 0) - j(4 - 4) + k(0 - 5)$

$(A - 2B) \times C = (-10i - 5k)$

Ⓑ  $A + (2C \times 3B)$

$2C = 2(i - 2k)$   
 $= 2i - 4k$

$3B = 3(3i - 2j + k)$   
 $= 9i - 6j + 3k$

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

$i(0 - 24) - j(6 - (-36)) + k(-12 - 0)$

$= -24i - 42j - 12k$

$A + (2C \times 3B) = \begin{vmatrix} i & j & k \\ 4 & 1 & -2 \\ 24 & -42 & -12 \end{vmatrix}$

$= i(-12 - 84) - j(-48 - 48) + k(84 - 24)$

$= i(-96) - j(-96) + k(60)$

② Coplanar Vectors  $A = (p \times q) = 0$

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

$p(3+2) = (-1 \times 3) - (-6)(4+2)$

$(-1+1) + 3(4+2)$

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

$= 3p - (-6(9) + 3(-15))$

$3p = (-54) + (45)$

$3p + 54 = 45$

$\frac{3p}{3} = \frac{9}{3}$

$p = 3$