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MARTIC NUMBER: 19/ENG03/005

MAT 102 ASSIGNMENT

/ ALONGEMU TREASURY APBENI-CAD
 / Civil Engineering
 / 19/ENG03/005

/ MAT 102 Assignment

① $A = 4\hat{i} + \hat{j} - 2\hat{k}$, $B = 3\hat{i} - 2\hat{j} + \hat{k}$, $C = \hat{i} - 2\hat{k}$

② $(A - 2B) \times C$

$$2B = 2(3\hat{i} - 2\hat{j} + \hat{k})$$

$$= 6\hat{i} - 4\hat{j} + 2\hat{k}$$

$$\therefore (A - 2B) \times C = [4\hat{i} - 6\hat{i} + \hat{j} + 4\hat{j} - 2\hat{k} - 2\hat{k}] \times (\hat{i} - 2\hat{k})$$

$$= (-2\hat{i} + 5\hat{j} - 4\hat{k}) \times (\hat{i} - 2\hat{k})$$

\hat{i}	\hat{j}	\hat{k}	$= \hat{i}$	5	-4	$-\hat{j}$	-2	-4	$+\hat{k}$	-2	5
-2	5	-4	0	-2		1	-2			1	0

$$= \hat{i}(-10 - 0) - \hat{j}(4 + 4) + \hat{k}(0 - 5)$$

$$= -10\hat{i} - 8\hat{j} - 5\hat{k}$$

③ $A \times (2C \times 3B)$

$$2C = 2(\hat{i} - 2\hat{k})$$

$$= 2\hat{i} - 4\hat{k}$$

$$3B = 3(3\hat{i} - 2\hat{j} + \hat{k})$$

$$= 9\hat{i} - 6\hat{j} + 3\hat{k}$$

$A \times (2C \times 3B) =$	$+$	$-$	$+$	$= 4$	0	-4	-1	2	-4	-2	2	0
	4	1	-2		-6	3		9	3		9	-6

$$= 4(0 - 24) - 1(6 + 36) - 2(-12 - 0)$$

$$= 48 - 42 + 24$$

$$= -66$$

2. $A = \hat{i} - 6\hat{j} - 3\hat{k}$, $B = 4\hat{i} + 3\hat{j} - \hat{k}$, $C = \hat{i} - 3\hat{j} + 3\hat{j} + 2\hat{k}$

$A \cdot (B \times C)$	\hat{i}	-6	-3	$= 0$
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4	3	-1
1	-3	2

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

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

$$9P + 54 + 45 = 0$$

$$9P = 99$$

$$P = 11$$

N.J.E.S.A