NAME: ENOKELA OKOH ENOCH. SERIAL NUMBER: 90 MARIC NUMBER 19/ENG09/1018.

(1) $A = 2i - j \quad B = 3i + j - 11k \quad C = 4i + 9j - 5k$

i) $-3A + 7B - 8C$

$A \times 2B = (33 \times 22) + (66 \times 44) + (15 \times 10) = 3780$.

v) $A - 2B - C$

$A - 2B = -4i - 3j + 22k$

$A - 2B - C = -8i - 7j + 27k$.

(5) The vector A and B are said to be perpendicular when their scalar product is equal to zero

Three vectors A, B, C are said to be coplanar if their triple scalar product $[A \cdot (B \times C)]$ is equal to zero.

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(1) $A = 2i - j \quad B = 3i + j - 11k \quad C = 4i + 9j - 5k$

i) $-3A + 7B - 8C$

$-3A = -3(2i - j) = -6i + 3j$

$7B = 7(3i + j - 11k) = 21i + 7j - 77k$

$-3A + 7B = 15i + 10j - 77k$

$-3A + 7B - 8C = -17i - 22j - 37k$

ii) $R = 2A + 4B - C$

$2A = 2(2i - j) = 4i - 2j$

$4B = 4(3i + j - 11k) = (12i + 4j - 44k)$

$2A + 4B = 16i + 2j - 44k$

$2A + 4B - C = 12i - 2j - 39k$

$|R| = 40.85$

The direction of cosines of R are

$\cos\alpha = 0.2938 \quad \cos\beta = +0.0490 \quad \cos\gamma = -0.9547$

iii) $A \times B \times C$

$= i(11 - 0) - j(-22 - 0) + k(21 - 5) = 11i + 22j + 5k = 11i + 22j + 5k$

$= i(-110 - 20) - j(-55 - 20) + k(44 - 88) = -130i + 75j - 44k$

iv)

$3A = 3(2i - j) = 6i - 3j$

$2B = 2(3i + j - 11k) = 6i + 2j - 22k$

$= i(33 - 0) - j(66 - 0) + k(6 + 9) = 33i + 66j + 15k$

$= i(22 - 0) - j(44 - 0) + k(9 + 6) = 22i + 44j + 10k$