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$$i = \begin{vmatrix} 2 & -4 \\ -2 & 1 \end{vmatrix} - J \begin{vmatrix} 4 & -4 \\ 8 & 1 \end{vmatrix} + K \begin{vmatrix} 4 & 2 \\ 8 & -2 \end{vmatrix}$$

$$i(2-(8)) - j(4-(-32)) + k(-8-16)$$

$$= -6i - 36j - 24k$$

$$(A \times B) \times C = \begin{vmatrix} i & j & k \\ 6 & -36 & -24 \\ 1 & 4 & 3 \end{vmatrix}$$

$$= i \begin{vmatrix} -36 & -24 \\ 4 & -3 \end{vmatrix} - J \begin{vmatrix} -6 & -24 \\ 1 & -3 \end{vmatrix} + K \begin{vmatrix} -6 & -36 \\ 4 & 4 \end{vmatrix}$$

$$= i(108 - (-96)) - j(18 - (-24)) + k(-24 - (-36))$$

$$= i(108 + 96) - J(18 + 24) + K(-24 + 36)$$

$$= 204i - 42j + 12k$$