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Quiz 02 CEM

Volúmen de un tetraedro con vértices en (1, 1, 1) (5, -7, 3) (7, 4, 8) (10, 7, 4)
A B C D

» by definition:

$V = |(a \times b) \cdot c|$ // triple scalar product.

$V_p = \begin{pmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{pmatrix}$ $V_T = \frac{1}{6} V_p$

$\overrightarrow{AB} = (5-1, -7-1, 3-1) = (4, -8, 2) = a$

$\overrightarrow{AC} = (7-1, 4-1, 8-1) = (6, 3, 7) = b$

$\overrightarrow{AD} = (10-1, 7-1, 4-1) = (9, 6, 3) = c$

$V_T = \frac{1}{6}\begin{pmatrix} 4 & -8 & 2 \\ 6 & 3 & 7 \\ 9 & 6 & 3 \end{pmatrix} = \frac{1}{6}\left(4(3(3) - 7(6) - (-8)(6(3) - 7(9)) + 2(6(6) - 3(9))\right)$

det

$= \frac{1}{6}|-474|$

$= 79\ u^3$