

MEEG 4703 [Quiz v1.073](#)

1. (10 points) Prove that the medians of a triangle trisect themselves.
 2. (10 points) Find the shortest distance d_s between the line passing through points $A(0, 4, 0)$ and $B(4, 0, 2)$ and the line passing through points $C(0, 2, 6)$ and $D(4, -2, 4)$.
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$$\begin{aligned} 2. \quad \overrightarrow{AB} &= \langle 4, -4, 2 \rangle & \overrightarrow{CD} &= \langle 4, -4, -2 \rangle \\ \mathbf{N} &= \overrightarrow{AB} \times \overrightarrow{CD} = 16(\mathbf{i} + \mathbf{j}) & \mathbf{n} &= \mathbf{N}/N = (\mathbf{i} + \mathbf{j})/\sqrt{2} \\ \overrightarrow{CA} &= \langle 0, 2, -6 \rangle & d_s &= |\mathbf{n} \cdot \overrightarrow{CA}| = 2/\sqrt{2} \\ d_s &= \sqrt{2} = 1.414 \end{aligned}$$