

NAME

DATE

### PROBLEM AP-07

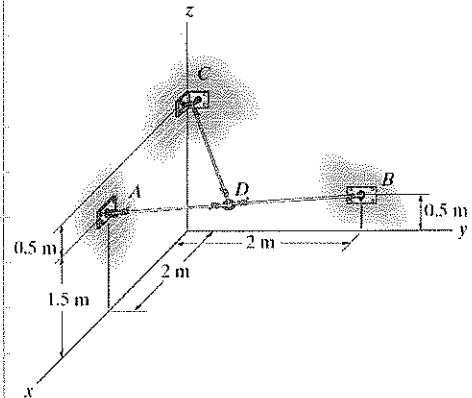
#### GIVEN:

Determine the lengths of wires  $AD$ ,  $BD$ , and  $CD$ . The ring at  $D$  is midway between  $A$  and  $B$ .

$$\begin{aligned} A & (2, 0, 1.5) \\ B & (0, 2, 0.5) \\ C & (0, 0, 2) \end{aligned}$$

#### REQUIRED:

$$\begin{aligned} AD & = ? \\ BD & = ? \\ CD & = ? \end{aligned}$$



#### SOLUTION:

$$\vec{AB} = \{-2\hat{i} + 2\hat{j} - 1\hat{k}\}^m \quad |AB| = \sqrt{2^2} =$$

$$\vec{AD} = \frac{1}{2}\vec{AB} = \{-1\hat{i} + 1\hat{j} - \frac{1}{2}\hat{k}\}^m \quad |AD| = 1.5^m = |BD|$$

$$\vec{OD} = \vec{OA} + \vec{AD} = \{1\hat{i} + 1\hat{j} + 1\hat{k}\}^m \quad D(1, 1, 1)$$

$$\vec{CD} = \{1\hat{i} + 1\hat{j} - 1\hat{k}\}^m \quad |CD| = 1.73^m$$

$\begin{aligned} AD & = 1.5 \text{ m} \\ BD & = 1.5 \text{ m} \\ CD & = 1.73 \text{ m} \end{aligned}$
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