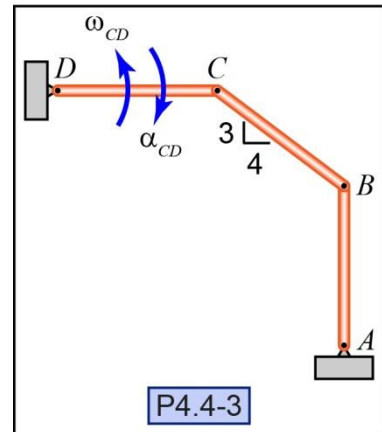


**P4.4-3)** The bar linkage shown is set in to motion by applying a counter clockwise angular velocity of 10 rad/s to bar  $CD$ . All links have the same length. It is additionally known that bar  $CD$  has a clockwise angular acceleration of 2 rad/s<sup>2</sup>. Determine the angular acceleration of bar  $AB$ .

Given:

Find:

Solution:



### Angular velocity

Write down the angular velocities that you solved for in P4.3-2.

$$\omega_{AB} = \underline{\hspace{2cm}}$$

$$\omega_{CB} = \underline{\hspace{2cm}}$$

Draw, on the figure, the directions of the angular velocities and angular accelerations. Include a coordinate system.

### Acceleration

Use the relative acceleration equation to determine the acceleration of the following points. Note: Some accelerations will be a function of the angular acceleration.

Link AB

$$\mathbf{a}_B = \underline{\hspace{2cm}}$$

Link CD

$$\mathbf{a}_C = \underline{\hspace{2cm}}$$

Link BC

$$\mathbf{a}_C = \underline{\hspace{2cm}}$$

### Angular acceleration

Solve for the unknown angular accelerations.

$$\alpha_{AB} = \underline{\hspace{2cm}}$$

$$\alpha_{BC} = \underline{\hspace{2cm}}$$