

Homework H3.A

Given: Arm AD is made from a quarter circular arc bar of radius R and is pinned to fixed ground at end A. Slotted arm BE is pinned to fixed ground at end B with pin B located directly below pin A, as shown. A pin at end D of the curved arm is allowed to slide within the slot of arm BE. At the position shown, arm BE is horizontal, and arm AD is rotating CW with a constant rate of ω_{AD} .

Find: For this position,

- (a) Determine the angular velocity of arm BE and the value of \dot{d} .
- (b) Determine the angular acceleration of arm BE and the value of \ddot{d} .

HINT: Use an observer attached to the slotted arm BE, and relate the kinematics of points B and D through the moving reference frame kinematics equations.

