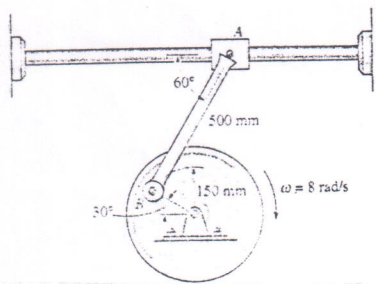
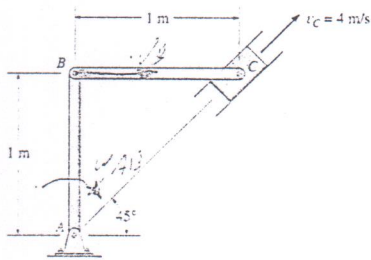


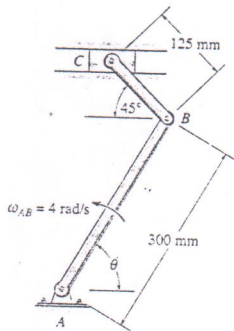
- 1- The wheel is rotating with an angular velocity  $\omega = 8 \text{ rad/s}$ . Determine the velocity of the collar A at this instant.



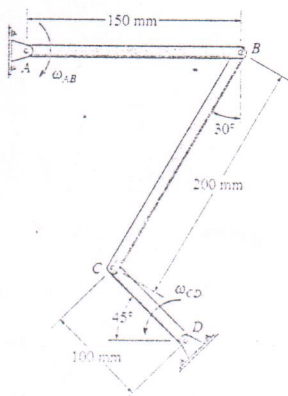
- 2- The velocity of the slider block C is 4 m/s up the inclined groove. Determine the angular velocity of links AB and BC and the velocity of point B at the instant shown.



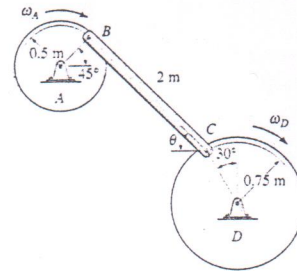
- 3- Determine the velocity of the slider block at C at the instant  $\theta = 45^\circ$ , if link AB is rotating at 4 rad/s.



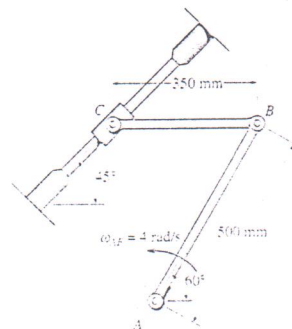
- 4- If link CD is rotating at  $\omega_{CD} = 5 \text{ rad/s}$ , determine the angular velocity of link AB at the instant shown.



- 5- If disk D has a constant angular velocity  $\omega_D = 2 \text{ rad/s}$ , determine the angular velocity of disk A at the instant  $\theta = 60^\circ$ .

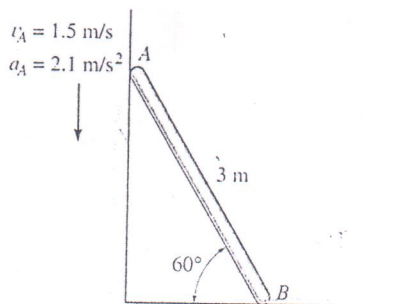


- 6- Knowing that angular velocity of link AB is  $\omega_{AB} = 4 \text{ rad/s}$ , determine the velocity of the collar at C and the angular velocity of link CB at the instant shown. Link CB is horizontal at this instant.

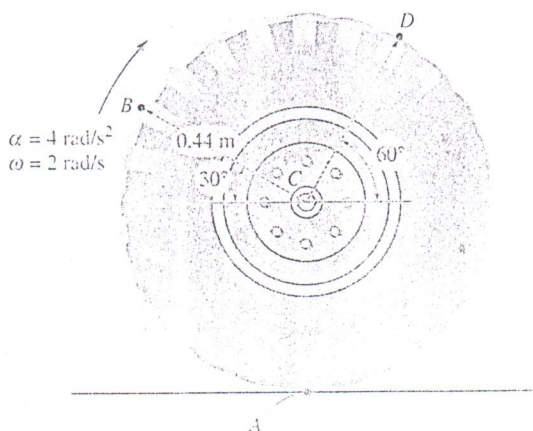


# sheet # 6

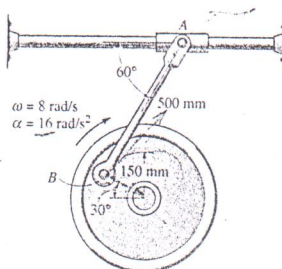
- 1 - At a given instant the top end  $A$  of the bar has the velocity and acceleration shown. Determine the acceleration of the bottom  $B$  and the bar's angular acceleration at this instant.



- 2 - The wheel is moving to the right such that it has an angular velocity  $\omega = 2 \text{ rad/s}$  and angular acceleration  $\alpha = 4 \text{ rad/s}^2$  at the instant shown. If it does not slip at  $A$ , determine the acceleration of point  $D$ .

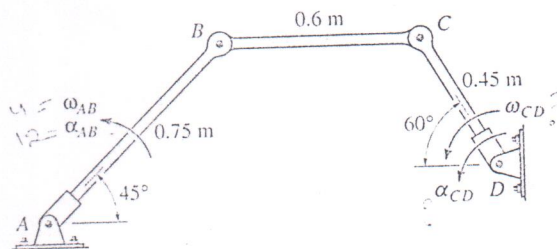


- 3 - At a given instant the wheel is rotating with the angular motions shown. Determine the acceleration of the collar at  $A$  at this instant.

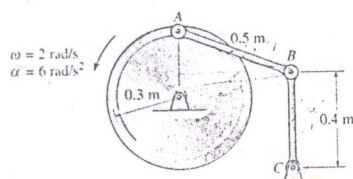


# Sheet # 7

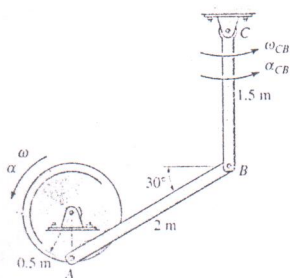
- 1- At a given instant, link  $AB$  has an angular acceleration  $\alpha_{AB} = 12 \text{ rad/s}^2$  and an angular velocity  $\omega_{AB} = 4 \text{ rad/s}$ . Determine the angular velocity and angular acceleration of link  $CD$  at this instant.



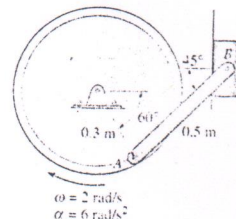
- 2- The flywheel rotates with an angular velocity  $\omega = 2 \text{ rad/s}$  and an angular acceleration  $\alpha = 6 \text{ rad/s}^2$ . Determine the angular acceleration of links  $AB$  and  $BC$  at this instant.



- 3- The disk rotates with an angular velocity  $\omega = 5 \text{ rad/s}$  and an angular acceleration  $\alpha = 6 \text{ rad/s}^2$ . Determine the angular acceleration of link  $CB$  at this instant.



- 4- At a given instant the wheel is rotating with the angular velocity and angular acceleration shown. Determine the acceleration of block  $B$  at this instant.



- 5- The wheel rolls without slipping such that at the instant shown it has an angular velocity  $\omega$  and angular acceleration  $\alpha$ . Determine the velocity and acceleration of point  $B$  on the rod at this instant.

