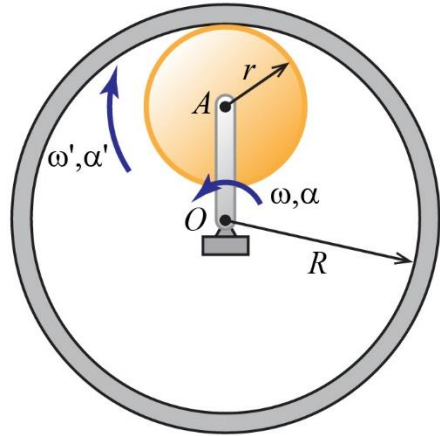**P4.6-6)** Arm OA has an angular velocity of ω. If no slipping occurs between the disk and the fixed outer ring, determine the angular velocity of the disk in terms of R, r and ω.

Given:

Find:

Solution:

Instantaneous center of zero velocity

Locate the IC and indicate its location on the figure.

Draw a coordinate system on the figure.

Point A

Determine the velocity of point A in two different ways (i.e. from point O and from the IC.)

$\mathbf{v}_A =$ _____ $\mathbf{v}_A =$ _____

Angular velocity

Determine the angular velocity of the disk.

$\omega' =$ _____