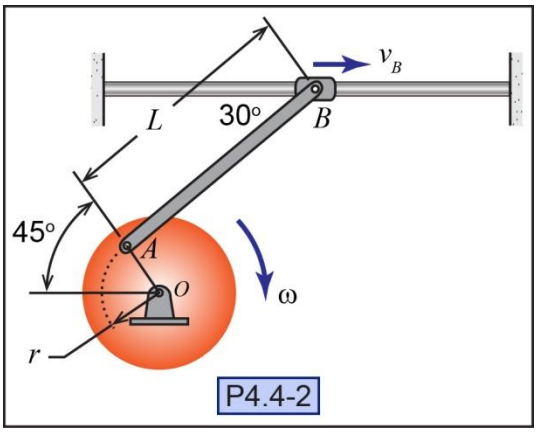
P4.4-2) The disk shown is pinned at O and is rotating clockwise with an angular velocity of ω = 5 rad/sec. The disk is connected via rod AB (L = 4 m) to collar B. The A end of rod AB is attached to the disk at a distance of r = 0.8 m from point O. Collar B is constrained to move along a horizontal guide. At the instant shown, determine the velocity of point B.



Given:

Find:

Solution:

Derive an expression for the velocity of point A.

$\mathbf{v}_A$ = _____

Derive an expression for the velocity of collar B as a function of ω_{AB}.

$\mathbf{v}_B(\omega_{AB})$ = _____

Use the fact that collar B is constrained to solve for the following unknowns.

$\boldsymbol{\omega}_{AB}$ = _____

v_B = _____ direction → ←