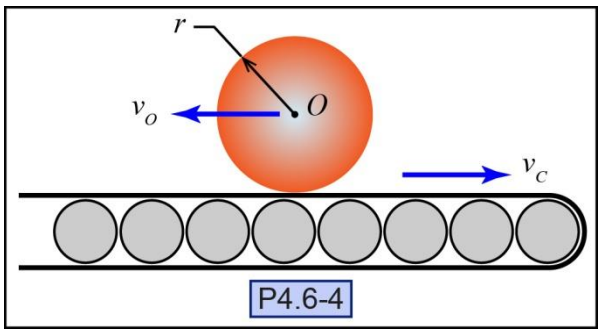
P4.6-4)[fe] A ball, of radius 2 meters, rides on a conveyer belt as shown in the figure. If the velocity of the ball's center O is 1.5 m/s, directed to the left, and the velocity of the top of the conveyer belt is 3 m/s, directed to the right, determine the angular velocity of the ball. Assume that the ball rolls on the conveyor belt without slipping.



P4.6-4

Given:

Find:

Solution:

What is the velocity of the point on the ball that touches the belt?

$\mathbf{v}_{contact}$ = _____

Calculate the angular velocity of the ball.

$\boldsymbol{\omega}$ = _____