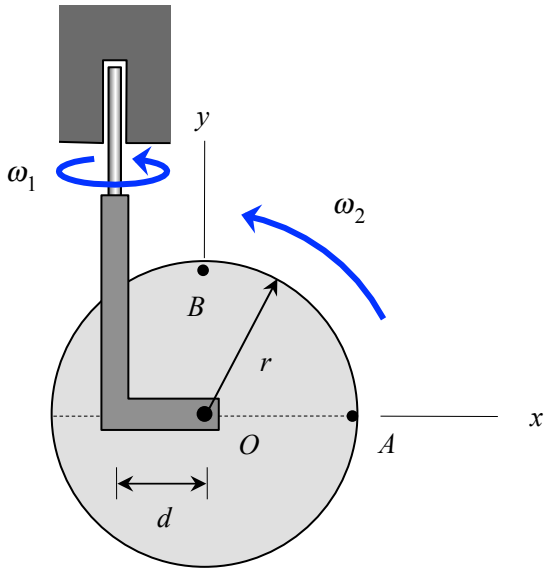
Homework H3.H

Given: A caster wheel is supported by an L-shaped bracket. The bracket is rotating about a fixed vertical axis with a constant rate of ω_1. The wheel rotates with respect to the bracket with a constant rate of ω_2.

Find: For this problem, determine:

1. The angular velocity and angular acceleration of the wheel. Write your answers as vectors.
2. The acceleration of point A on the wheel at the instant shown when A is immediately to the right of the center O of the wheel.
3. The acceleration of point B on the wheel at the instant shown when B is immediately above the center O of the wheel.



Use the following parameters in your analysis: $\omega_1 = 2$ rad/s, $\omega_2 = 5$ rad/s, $r = 200$ mm and $d = 100$ mm.