

4-15. A 5-kg reel has a radius of  $r = 1.2$  m, and the radius of gyration about  $O$  is  $k_G = 10$  m. Two independently and normally distributed force  $F_1 \sim N(200, 20^2)$  N and  $F_2 \sim N(200, 10^2)$  N are applied to the reel, and the reel starts from rest. Determine the probability that the angular velocity of the reel is smaller than 3 rad/s after 3 seconds. Neglect friction and the weight of the rope.

**Solution:**  $\Pr\{\omega < 3\} = 0.77$ .

