3-9. Gear A has a normally distributed initial angular velocity $(\omega_A)_0 \sim N(2, 0.2^2)$ rad/s, then it accelerates with the angular acceleration $\alpha = (3t^2)$ rad/s^2, where t is in seconds. If $r_A = 0.3$ m and $r_B = 0.8$ m, determine the probability that the angular velocity of gear B is smaller than 3.8 rad/s when $t = 2$ s.

Solution: $\Pr(\omega_B < 3.8) = 0.75$.