4-13. The double wheel has two wheels welded together. The mass and radius of gyration of the double wheel are $m = 20 \text{ kg}$ and $k_O = 200 \text{ mm}$, respectively. A normally distributed force $F \sim N(3000, 300^2) \text{ N}$ is applied to the inner wheel to hoist the 100 kg block that is attached to the outer wheel. If $R = 0.5 \text{ m}$ and $r = 0.2 \text{ m}$, determine the probability that the velocity of the block is smaller than 10 m/s after 5 seconds. Assume the block is originally at rest and the mass of the rope is negligible.

Solution: $\Pr\{v_B < 10\} = 0.46$