

Homework 5

The surface of a cam is expressed by a logarithmic spiral formula $r = 45e^{0.04\theta}$ mm, where θ is in radians. The cam rotates at an angular velocity of $\omega \sim N(4, 0.2^2)$ rad/s. Determine the distribution of the velocity of the follower rod AB at the instant $\theta = \frac{\pi}{3}$. If the allowable velocity of AB is $v_a = 230$ mm/s, find the probability of failure of the system.

(Ans. $p_f = 3.6013 \times 10^{-6}$)

