

26. The axial elongation of a tension rod is measured to be $\delta_a \sim N(2, 0.02^2)$ mm. The tension rod is 2 m long, and it has a yield strength of $S_y \sim N(60, 3^2)$ MPa and a modulus of elasticity of $E = 120$ GPa. If S_y and δ_a are independent, estimate the probability of failure using the First Order Second Moment Method.

Answer: $p_f = 3.91(10^{-5})$