

29. A solid circular shaft is subjected to an axial force $P \sim N(3000, 300^2)$ N . It has a diameter of $d \sim N(20, 0.2^2)$ mm and a length of $l \sim N(500, 5^2)$ mm. The modulus of elasticity is $E = 200$ GPa. If P , d and l are independent, determine the mean and standard deviation of the tensile spring constant using the First Order Second Moment Method.

Answer: $\mu_k = 1.2566(10^8)$ N/m, $\sigma_{\Delta d} = 2.8099(10^6)$ N/m