23. A tension rod has a diameter of $d \sim N(2, 0.02^2)$ in and a length of $l \sim N(10, 0.1^2)$ ft. It is subjectd to a load of $P \sim N(30,\ 3^2)$ kip. The modulus of elasticity is $E = 30(10^6)$ psi and the Poission ratio is $\nu = 0.29$. If P, d and l are independent, determine the mean and standard deviation of the change in rod diameter using the First Order Second Moment Method.

Answer: $\mu_{\Delta d} = -1.8462(10^{-4})$ in, $\sigma_{\Delta d} = 1.8554(10^{-5})$ in