20. A stress element undergoes two-dimensional stresses $S_x \sim N(40,\ 4^2)$ MPa and $S_y \sim N(20, 2^2)$ MPa. The modulus of elasticity is $E = 50$ MPa and the Poission's ratio is $v = 0.3$. If the axial length of the element is $l_x = 2$ cm, and S_x and S_y are independent, determine the mean and standarad deviation of the axial elongation using the First Order Second Moment Method.

Answer: $\mu_{\delta_x} = 1.360(10^{-2})$ m, $\sigma_{\delta_x} = 1.618(10^{-3})$ m