46. An internal pressure $p \sim N(900, 90^2)$ psi is applied to a cylindrical tube with an inside diameter of $d_i = 5$ in. The allowable tangential stress is $S_a \sim N(10, 1^2)$ kpsi. If the maximum probability of failure is designed to be $p_f = 10^{-5}$, determine the minimum thickness of the tube using the theory of thin-walled vessels.

Answer: $t_{min} = 0.474$ in, $t_{preferred} = 0.50$ in