21. A bar has a hollow round cross-section with an outside diameter of $d_o = 12$ cm and an inside diameter of $d_i = 5$ cm. It is subjected to a torsion $T \sim N(7, 0.7^2)$ kN·m. If the allowable stress of the bar is $\tau_a \sim N(40, 4^2)$ MPa, and T and τ_a are independent, determine the probability of failure using the First Order Second Moment Method.

Answer: $p_f = 1.78(10^{-5})$