3-7.   A rod has a diameter of 1 in, and its weight follows a random distribution $W \sim N\left(10, 0.7^2\right)$ lb/ft . The allowable torsional stress at the section lacated at A is $\tau_a \sim N(6, 0.7^2)$ ksi . Determine the probability of failure of this rod. Only the the internal torque due to the rod's weight is taken into account. Assume that τ_a and W are independent.

(**Ans.** $p_f = 3.73 \times 10^{-6}$)