

8-16. A 20-ft long tube is fixed at both ends. The cross-sectional area of this tube is shown in the figure. If the modulus of elasticity follows $E \sim N\left(29 \times 10^6, (2 \times 10^6)^2\right)$ psi . Determine the distribution of the critical axial buckling load. If the axial load acting on the column follows $P \sim N\left(120, 10^2\right)$ kip , determine the probability of failure. Assume that E and P are independent and Euler's formula is available. **(Ans. $P_{cr} \sim N(184.68, 12.74^2)$ kip , $p_f = 3.2422 \times 10^{-5}$)**

