

8-15. A $W16 \times 26$ wide flange beam is used to support a vertical force $P \sim N(70, 7^2)$ kip as shown in the figure. The beam is 13-ft long and pinned connected at both of its ends. The modulus of elasticity follows $E \sim N(29 \times 10^6, (2 \times 10^6)^2)$ psi . Determine the distribution of the critical buckling load. Also, determine the probability buckling. Assume that E and P are independent.

(Ans. $P_{cr} \sim N(112.91, 7.79^2)$ kip , $p_f = 2.085 \times 10^{-5}$)

