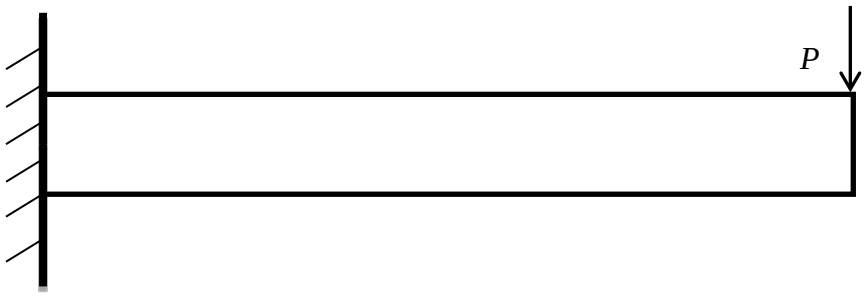
For problem 2, if the events of bending and shear are not independent, the probability that both of them occur is 0.0002, what is the reliability of the cantilever beam?



Solution

The probability of failure of the cantilever beam $p_f = P(E_1 \cup E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2) = 0.002 + 0.0006 - 0.0002 = 0.0024$

The reliability of cantilever beam is $R = 1 - p_f = 0.9976$