

MAC2312: Calculus 2 - Section 3

Quiz 10: 8.5 Probability

June 18, 2015

1. Suppose $f(t)$, where t is measured in hours, is the probability density function for the lifetime of a lightbulb with probability space $[0, \infty)$. What is the probability that the lightbulb will fail within the first 500 hours?
 - A. $\int_0^\infty t f(t) \, dt$
 - B. $\int_0^{500} f(t) \, dt$**
 - C. $\int_{500}^\infty f(t) \, dt$
 - D. $f(500)$

If X is a random variable which is the lifetime of the lightbulb, the probability that the lightbulb fails within the first 500 hours is $P(X \leq 500) = \int_0^{500} f(t) \, dt$.