
1.(1 pt) Suppose that the time (in hours) required to repair a machine is an exponentially distributed random variable with parameter $\lambda = 0.7$. What is

(a) the probability that a repair takes less than 6 hours? _____

(b) the conditional probability that a repair takes at least 11 hours, given that it takes more than 8 hours? _____

2.(1 pt) Suppose that the life distribution of an item has hazard rate function $\lambda(t) = 2.7t^2$, $t > 0$. What is the probability that

(a) the item survives to age 3? _____

(b) the item's lifetime is between 1 and 2? _____

(c) a 1-year-old item will survive to age 4? _____

3.(1 pt) Let X be an exponential random variable with parameter $\lambda = 4$, and let Y be the random variable defined by $Y = 2e^X$. Compute the probability density function of Y :

$f_Y(t) =$ _____