University of Texas at Austin

Problem set 2

The Exponential Distribution.

Problem 2.1. The lifetime T of a printer is modeled by an exponential distribution with parameter $\theta = 2$. There is a warranty on the printer with the following stipulations:

- If the printer fails within the first year, a full refund of 200 is issued.
- If the printer fails within the second year, a half refund is issued.
- If the printer fails after two years or longer, no refund is issued.

What is the *probability mass function* of the refund?

Problem 2.2. The waiting time until a driver is involved in an accident is modeled as exponential with an unknown parameter. We know that 30% of the drivers will be involved in an accident in the first two months. What is the probability that the driver is involved in an accident in the first three months?

Problem 2.3. Find the ratio of the 90^{th} percentile to the median of the exponential distribution with parameter θ.