

UNIVERSITY OF TEXAS AT AUSTIN

Quiz #6

Please, provide your **complete solutions** to the following problems. Providing just the final answer will earn you zero points even if the answer is correct.

Problem 6.1. (5 points) Let $N \sim \text{Poisson}(\lambda)$ for an unknown parameter λ . The following values are observed

4, 5, 6, 9.

Find the maximum likelihood estimate of $\mathbb{P}[N = 1]$.

Problem 6.2. (10 points) Policies have a deductible $d = 100$. Seven **claim amounts** are observed, with values

120, 180, 200, 270, 300, 1000, 2500.

Ground-up losses are modeled using the Pareto distribution with $\theta = 400$ and α unknown.

Determine the maximum likelihood estimate of α .

Note: The above observations are of the per-payment random variable!