

Name _____

Student Number _____

STA256H5F Quiz 8

Let $X \sim \text{exponential}$ with $\beta = 1/\ln(2)$

1. (3 marks) Find $P(0 < X < 1)$.

$1/2$

2. (3 marks) Find a formula for $P(0 < X < K)$ for some integer $K > 0$.

$P(0 < X < K) = 1 - (1/2)^K$

3. (4 marks) The CDF of a Geometric RV is $1 - (1 - p)^K$. Show that X has a geometric distribution (for $k \in \mathbb{Z}^+$) and find the value of p . You should use the results from questions 1 and 2. *When you are done please check the back!*

$P(0 < X < K) = 1 - (1/2)^K$ is same as CDF of geometric with $p = 1/2$, if we only allow k to take on integer values.

Don't worry, there isn't another question on this quiz. I wanted to take a moment to say it was a pleasure having all of you this summer, I wish you the best of luck on the final term test and exam, and good luck to you on your future studies! -*Matt*

Good Luck!