MATH10282: INTRODUCTION TO STATISTICS

SEMESTER 2

QUIZ PROBLEM 2

(Deadline: Thursday 25 February 2021, 10:00am)

Suppose that $X_1, \ldots, X_n$ is a random sample from a distribution specified by the probability density function

$$f_X(x) = ax^{a-1}$$

for $a > 0$ and $0 < x < 1$. What are the mean and variance of the sampling distribution of the sample mean, $\overline{X}$?

a) mean $= \frac{a}{a+1}$, variance $= \frac{a}{(a+2)(a+1)^2}$.

b) mean $= \frac{a}{a+1}$, variance $= \frac{a}{n(a+2)(a+1)}$.

c) mean $= \frac{a}{a+1}$, variance $= \frac{a}{n(a+2)(a+1)^2}$.

d) mean $= \frac{a}{a+1}$, variance $= \frac{a}{n(a+1)^2}$.

This problem is worth 1 mark. Marking scheme: 1 mark if the answer is correct, 0 mark if the answer is incorrect.

Please use Blackboard to enter your answer.