

MATH10282: INTRODUCTION TO STATISTICS
SEMESTER 2
QUIZ PROBLEM 4
(Deadline: Friday 11 March 2022, 11:00am)

Suppose that a random variable X has the cumulative distribution function

$$F_X(x) = 1 - (1 - x^a)^b$$

for $0 < x < 1$, $a > 0$ and $b > 0$. The quantile function, $Q(p)$, and the inter quartile range (IQR) are

a) $Q(p) = \left[1 - p^{1/a}\right]^{1/b}$, $\text{IQR} = \left[1 - (0.75)^{1/a}\right]^{1/b} - \left[1 - (0.25)^{1/a}\right]^{1/b}$.

b) $Q(p) = \left[1 - p^{1/b}\right]^{1/a}$, $\text{IQR} = \left[1 - (0.75)^{1/b}\right]^{1/a} - \left[1 - (0.25)^{1/b}\right]^{1/a}$.

c) $Q(p) = \left[1 - (1 - p)^{1/a}\right]^{1/b}$, $\text{IQR} = \left[1 - (0.25)^{1/a}\right]^{1/b} - \left[1 - (0.75)^{1/a}\right]^{1/b}$.

d) $Q(p) = \left[1 - (1 - p)^{1/b}\right]^{1/a}$, $\text{IQR} = \left[1 - (0.25)^{1/b}\right]^{1/a} - \left[1 - (0.75)^{1/b}\right]^{1/a}$.

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.