MATH48181/68181: EXTREME VALUES AND FINANCIAL RISK
SEMESTER 1
QUIZ PROBLEM 7
(Deadline: 11:00am on Wednesday, 1 December 2021)

Suppose X represents loss and has the following probability density function

$$f_X(x) = \begin{cases} \frac{abx^{b-1}}{\delta^b(a+b)}, & \text{if } x \leq \delta, \\ \frac{ab\delta^a}{x^{a+1}(a+b)}, & \text{if } x > \delta \end{cases}$$

for $x > 0$, $a > 0$, $b > 0$ and $\delta > 0$. Derive an explicit expression for $\mathrm{VaR}_p(X)$. Please give full details.

This problem is worth 1 mark. Marking scheme: 1 mark if the answer is correct, and the derivation is correct and detailed enough; 0.5 mark if the answer is correct, and the derivation is incorrect or not detailed enough; 0.5 mark if the answer is incorrect or not given, but the derivation is correct and detailed enough; 0 mark if the answer is correct, but the derivation is not detailed enough; 0 mark if the answer is incorrect, and the derivation is not detailed enough.

Please use Blackboard to submit your answer.