

**MATH3/4/68181: EXTREME VALUES AND FINANCIAL RISK**  
**SEMESTER 1**  
**SOLUTIONS TO QUIZ PROBLEM 2**

Suppose  $X$  is a random variable with probability mass function

$$p(k) = \begin{cases} \frac{1}{N}, & \text{if } k = 1, \\ \frac{1}{k(k-1)}, & \text{if } 2 \leq k \leq N. \end{cases}$$

Note that  $w(F) = N$  and

$$\frac{p(N)}{1 - F(N-1)} = \frac{p(N)}{1 - \Pr(X \leq N-1)} = \frac{p(N)}{\Pr(X > N-1)} = \frac{p(N)}{\Pr(X \geq N)} = \frac{p(N)}{p(N)} = 1.$$

Hence,  $F$  does not belong to any of the three domains of attraction.