

Week 86 (5/3/04)

**Shifted intervals**

Let  $\epsilon \equiv 1/N$ . Choose a number at random between 0 and 1. Choose a second number between  $\epsilon$  and  $1 + \epsilon$ . Choose a third number between  $2\epsilon$  and  $1 + 2\epsilon$ . Continue this process, until you choose an  $N$ th number between  $1 - \epsilon$  and  $2 - \epsilon$ . What is the probability that the first number you choose is the smallest of all the numbers? Assume that  $N$  is very large, and make suitable approximations.