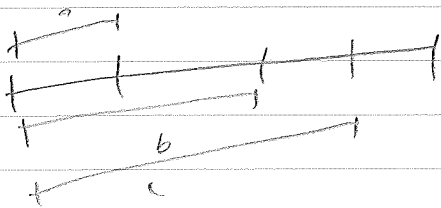


5-9-(82) i.i.d.'s URN with $n+1$ balls. 82 A
 Show probability (that ball 1 is never discarded) 83 A
 positive

$$\prod_{n=1}^{\infty} \frac{(n^2+1)^{-1}}{n^2+1} = \prod_{n=1}^{\infty} \frac{n^2}{n^2+1} \approx \underline{.272029} > 0 \checkmark$$

5-9-(83) randomly choose a, b, c from $[0, 1]$
 what is the probability there is a triangle w/ sides of length a, b, c



choose c to correspond to the longest side. Then $b, c > a$
 $c > b - a$

$\begin{cases} c \leq a + b \\ b \leq c + a \\ a \leq b + c \end{cases}$ take complements

$\begin{cases} c > a + b & \text{area} \\ b > c + a & \text{area} \\ a > b + c & \text{area} \end{cases}$

Subtract off from (area) as probability
 the area of each inequality.

Area of triangle $\frac{1}{2}bh$
 $\left(\frac{1}{2}\right)\left(\frac{1}{2}\right)(1)$
 $\{ \text{Area} = \left(\frac{1}{2}\right)\left(\frac{1}{2}\right) \}$

Area = probability = $\frac{1}{4}$

