

CIS 1600 Recitation 12

Relations and Probabilistic Method

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The Probabilistic Method

The *probabilistic method* is a proof technique for proving “there exists an x such that $P(x)$ is true” claims without directly providing x .

The general procedure of a probabilistic method proof is:

- ▶ Construct a random procedure to generate candidates for x .
- ▶ Let x be the candidate generated by the random process. Show that $\Pr[P(x)] > 0$, or if $P(x)$ is phrased numerically you can show that in expectation $P(x)$ is true.
- ▶ Conclude that there must be some x , corresponding to an outcome in the sample space, such that $P(x)$ is true.