

Chapter 10.?
Monday, Week 8

Warmup

How many possible sequences of five coin flips are there?

How many of those sequences contain three heads?

What is the probability that five coin flips will result in three heads?

What is the maximum number of edges a graph on n vertices can have?

How many (labeled) graphs on n vertices are there?

“Almost All” Graphs

Find a rigorous way to state the following: “Most natural numbers are not prime.” (Your definition should use limits.)

Given your definition, is it true that most natural numbers are not divisible by 10?

Probabilistic Method

The average weight of 10 friends is 150 pounds. What can you say about the heaviest friend?

Suppose that the probability that a random friend weighs 180 pounds is non-zero. Can you say for sure that such a friend exists?

Intermission

Suppose $x + y = k$ for some positive constant k . When is the function $1/x + 1/y$ at a minimum? (Remember calculus?)

If $x + y + z = k$ for some positive k , when is the function $1/x + 1/y + 1/z$ at a minimum?