Draw the dfs forest of the graph below (include back edges as dashed lines, label vertices with their pre/postorder time stamps). Give the number of components.

Draw the bfs forest (include cross edges as dashed lines, label each vertex with its distance to the root of its tree),

```
A: F,H
B: G
C: G,H
D: J,K,L
E: K
F: A
G: B,C,H
H: A,C,G,I
I: H
J: D,K
K: D,E,J
L: D
```

Each week you buy a lottery ticket. Each week, your odds of winning are 1/3. What is the expected number of weeks you have to play until you win? Prove that your answer is correct.

As n gets large, the number of primes in $\{2, \ldots, n\}$ is about $\ln(n)$. Estimate the probability that a number with at most 33 bits is prime.

You repeatedly pick a 33-bit positive integer at random and check whether it is prime, until you find a prime number. What is the expected number of primality checks?

For the previous question, what is the expected number of checks if the integer you pick is always odd?