COMP 550
Algorithms and Analysis
Spring 2020
Pop Quiz 3
Don't forget to write your name on the quiz sheet.

1. Consider the recurrence relation $T(n) = 2T(n-1) + T(n-2)$ for $n \geq 2$, $T(0) = 1$, $T(1) = 2$. Compute $T(2)$, $T(3)$, $T(4)$, $T(5)$, and $T(6)$. Fill in the blanks a)_____, b)_____, c)_____, d)_____, e)_____ with the values in order.

A fair *die* when tossed will give each of the values 1 through 6 with equal probability. The plural of die is *dice*.

2. Suppose two fair dice are tossed. What is the probability that they will produce equal values? _____

3. Suppose two fair dice, called A and B, are tossed. What is the probability that A will produce a larger value than B? _____

4. Suppose two fair dice are tossed. What is the probability that the sum of their values will equal 7? _____

5. Suppose two fair dice are tossed. What is the probability that the sum of their values will equal 6? _____

6. What is the expected number of heads if a fair coin is tossed 20 times? _____

7. What is the expected value for a single toss of a fair die? _____

8. What is the expected value for the sum of two tosses of a fair die? _____

9. Suppose someone tosses a fair coin 10 times. What is the probability that all tosses will result in the same outcome, that is, all tosses will be heads or all tosses will be tails? _____

10. What is the sum of the series $1/2 + 2/4 + 3/8 + 4/16 + \ldots$? _____