

Real Quiz 5 of Dr. Z.'s Dynamical Models in Biology class

Name: (print!)

Email: (print!)

1.: (4 points) Let $a(n)$ be the discrete function defined on $0 \leq n \leq 99$ satisfying:

$$a(n+2) - a(n) = 0 \quad ; \quad a(0) = 1 \quad , \quad a(99) = 2 \quad .$$

What is $a(40)$? What is $a(41)$?

2. (4 points). In a gambler's ruin game you win a dollar the maximal capital is 10 dollars. You currently have 5 dollars.

(i): (1 point) How likely are you to exit a winner if the prob. of winning a dollar in any one round is 0.5 (and hence the prob. of losing a dollar is 0.5)?

(ii): (3 point) How likely are you to exit a winner if the prob. of winning a dollar in any one round is 0.4 (and hence the prob. of losing a dollar is 0.6)?

3. (2 points) What is the expected duration of a fair Gambler's Ruin game if the maximal capital is 200 dollars and you currently have 100 dollars?