

M351 AHw§2.8 (S. Zhang) .

1. (2.8:a1) Suppose that when a certain lake is stocked with fish, the birth and death rates β and δ are both inversely proportional to \sqrt{P} . Show that

$$P(t) = \left(\frac{1}{2}kt + \sqrt{P_0} \right)^2$$

If $P_0 = 100$ and after 6 months, there are 169 fish in the lake, how many will there be after 1 year?

2. (2.8:a2) The time rate of change of an alligator population P in a swamp is proportional to the square of P . The swamp contained a dozen alligators in 1988, two dozen in 1998. When will there be four dozen alligators in the swamp? What happens there after?