## Worksheet 2/25/2025

1. Suppose a population P satisfies

$$\frac{dP}{dt} = 0.4P - 0.001P^2, \ P(0) = 50$$

where t is measured in years.

- (a) Find the carrying capacity?
- (b) Find P'(0).
- (c) When will the population reach 50% of the carrying capacity?

2. Suppose a population grows according to a logistic model with initial population 1000 and carrying capacity 10,000. If the population grows to 2500 after one year, what will the population be after another three years?