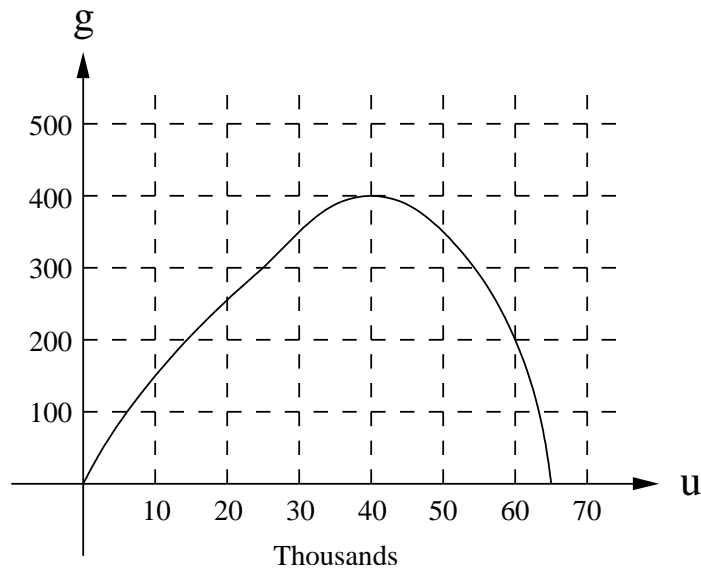


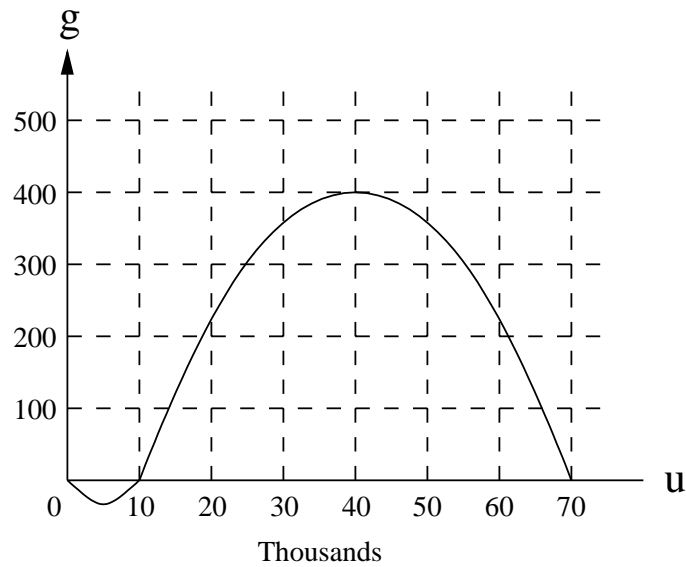
Name \_\_\_\_\_

1. The graph of the function  $g = ru$ , which gives the growth of a species in a year in terms of the population size, is seen in the following diagram. The harvesting strategy is to harvest 100 plus an additional 0.5% of the population each year.



- (a) Estimate the stable equilibrium population.
- (b) Estimate the minimum viable population.
- (c) Estimate the eventual yearly harvest as long as the current population is above the minimum viable population.

2. The graph of the function  $g = ru$ , which gives the growth of a species in a year in terms of the population size, is seen in the following diagram.



- (a) Estimate the stable equilibrium population if there is a constant yearly harvest of 300.
- (b) Estimate the minimum viable population if there is a constant yearly harvest of 300.
- (c) Estimate the maximum constant sustainable harvest and the equilibrium population size for this harvest.
- (d) Approximate the percent of the population that should be harvested each year to maximize the sustainable harvest.
- (e) Estimate the intrinsic growth rate for this population.