



2. The growth rate of a population  $N = N(t)$  is governed by the model equation
- $$\frac{dN}{dt} = 0.04N \left(1 - \frac{N}{150}\right) \left(\frac{N}{30} - 1\right).$$

a. Determine the equilibrium values.

b. If  $N(0) = 35$ , sketch the long term behavior of  $N(t)$ , and explain why the graph has the shape that it does. Then do the same if  $N(0) = 25$ .

c. Say whether each equilibrium value is stable or unstable.