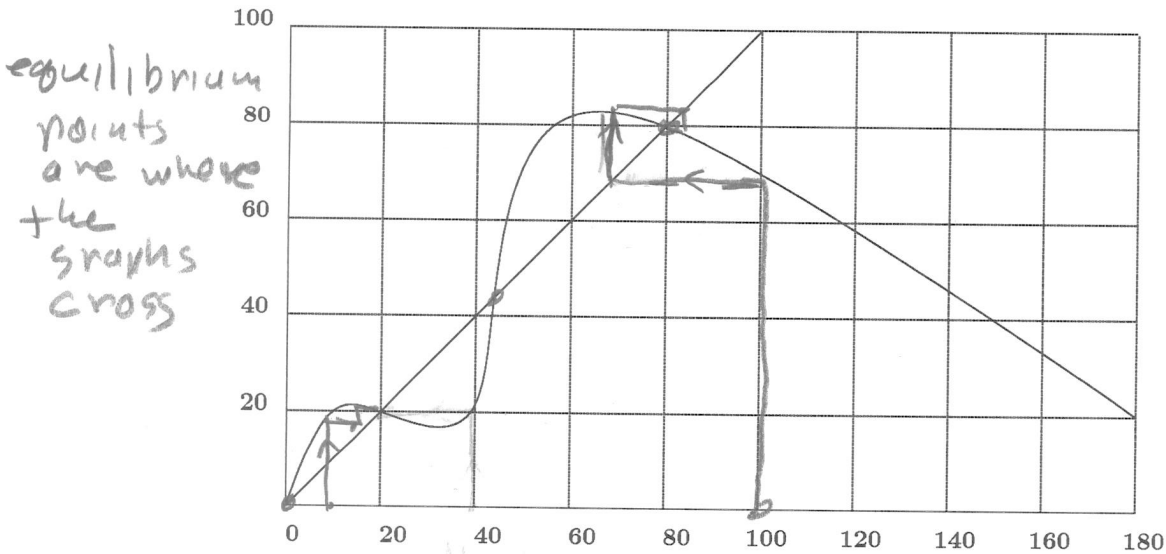


*You must show your work to get full credit.*

A population of frogs in a pond grows by the rule

$$N_{t+1} = f(N_t)$$

where the graph of  $f$  is given in the following graph.



1. What are the equilibrium points of this?

Equilibrium points are 0, 20, 42, 80

2. Which of the equilibrium points are stable?

Stable equilibrium points are 20, 80

(where  $|slope| < 1$ )

3. If  $N_0 = 100$  estimate  $N_{40}$ .

$N_{40} \approx$  80

4. If  $N_0 = 10$  estimate  $N_{50}$ .

$N_{50} \approx$  20