Mathematics 172

Quiz 3 Name: Key

You must show your work to get full credit.

Consider a model

$$\Delta P = 1.2P_t\left(1 - \frac{P}{20}\right), \qquad P_0 = 10$$

1. Rewrite this in the form $P_{t+1} = f(P_t)$.

$P_{t+1} - P_t = 1.2P_t\left(1 - \frac{P_t}{20}\right)$

$P_{t+1} = P_t + 1.2P_t\left(1 - \frac{P_t}{20}\right)$

$P_{t+1} =$ $P_t + 1.2P_t\left(1 - \frac{P_t}{20}\right)$

2. Find the following

$P_1 =$ 16.00

$P_2 =$ 19.84

$P_3 =$ 20.03

$P_1 = 10 + 1.2(10)\left(1 - \frac{10}{20}\right) = 16.00$

$P_2 = 16 + 1.2(16)\left(1 - \frac{16}{20}\right) = 19.84$

$P_3 = 19.84 + 1.2(19.84)\left(1 - \frac{19.84}{20}\right) = 20.03$

3. If $P = 25$ is ΔP positive or negative (circle one).