

MATH 172 Fall, 2011 Quiz #4 Name: _____

1. We have $\Delta P = -0.2P_n$.
 - a. Write the updating equation.

 - b. If $P_0 = 50$, write the explicit solution for P_n .

 - c. Describe the long term behavior of P_n as $n \rightarrow \infty$.

2. Suppose $Q_{n+1} = -0.7Q_n + 153$.
 - a. Compute the equilibrium value Q^* .

 - b. If $Q_0 = 100$ determine the solution equation for Q_n . Recall that an affine discrete model $P_{n+1} = aP_n + b$ has an explicit solution $P_n = Ca^n + P^*$, where P^* is the equilibrium value, and C can be determined from the initial condition.

 - c. Determine the long term behavior of Q_n as $n \rightarrow \infty$.