Math 172 **Quiz 2** **September 13, 2006**

Name _____

1. Suppose you borrow $\$120,000$ at an 8.4% annual interest rate compounded monthly to be paid back in monthly payments of \$1800.

   (a) Write down a discrete dynamical system with initial condition to represent the balance of the loan just after each month's payment.

   (b) How many months will it take to pay back the loan?

   (c) The last payment will be a bit different than each of the preceding monthly payments. To the nearest penny, what will be the amount of this last payment?

2. Find the equilibrium value for the following dynamical system.

$$u(n) = 0.9u(n-1) - 3.5$$

3. Find the equilibrium value for the following dynamical system.

$$u(n) = 1.25u(n-1) - 6.1$$

4. Find the equilibrium point for the following dynamical system.

$$u(n) = 2u(n-1) + v(n-1) + 3$$
$$v(n) = 4u(n-1) - v(n-1) + 6$$