Quiz 9

Name: _____Key_____
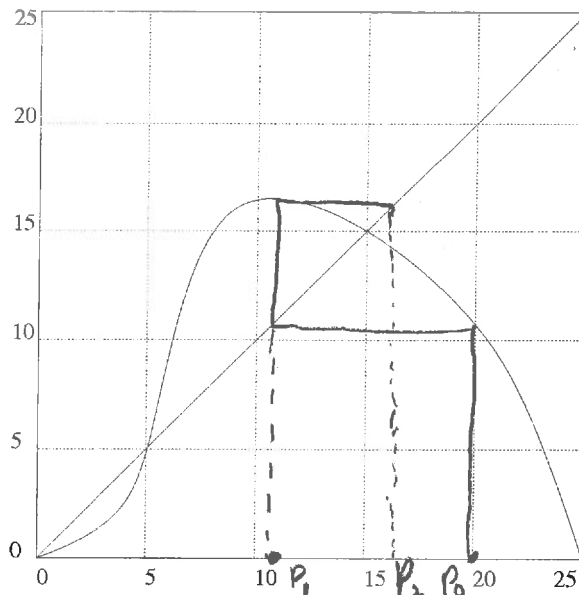
You must show your work to get full credit.

The figure above defines a graph $P_{t+1} = f(P_t)$ for the population size of the number of moles in a backyard.

1. If the numbers of moles this year is $P_0 = 20$, give estimates for the number, P_1, of moles next year and the number, P_2, of moles two years from now. Do this by drawing a cobweb diagram on the graph above.

$P_1 \approx$ ___11___

$P_2 \approx$ ___16___

2. This system has three equilibrium points. What are they?

These are where the $P_{t+1} = P_t$ line

Equilibrium points are: ___0, 5, 15___

3. Recall (and from now on you should have this fact memorized) an equilibrium point is **stable** if |stable| < 1 and **unstable** if |slope| > 1. Use this criterion to determine which of the equilibrium points are stable and which are unstable.

The stable equilibrium points are: ___0, 15___

The unstable equilibrium points are: ___5___

At 0 |slope| < 1
At 5 |slope| > 1
At 15 |slope| < 1