Quiz 7

Name: _____Key_____

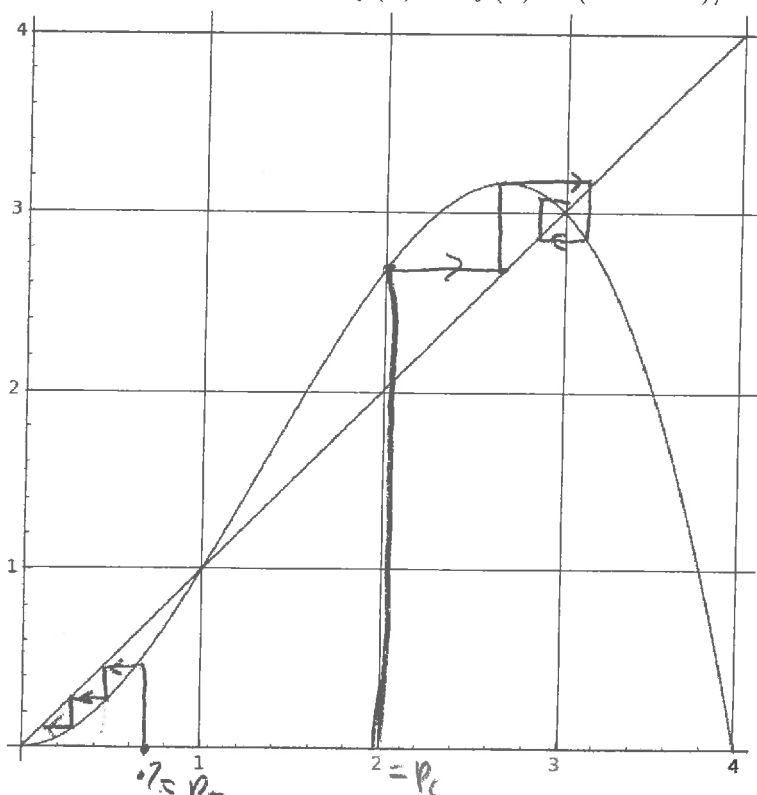***You must show your work to get full credit.***

The following is the graph of $y = x$ and $y = f(x)$ for $f(x) = (4x^2 - x^3)/3$ on the same axis.

$0.7 = P_0$ $2 = P_t$

We will look at the discrete dynamical $P_{t+1} = f(P_t)$.

1. (a) First consider the case where $P_0 = .7$. Find the following $P_1 = $ ___.539___

   $P_2 = $ ___.335___

   $P_3 = $ ___.137___

   (b) Draw the cobweb starting at $P_0 = .7$ and give an approximation of P_{20}.

   From the picture we see it
   steps down to 0. $P_{20} \approx$ ___0___

2. (a) Now consider the case $P_0 = 2$. Find the following $P_1 = $ ___2.667___

   $P_2 = $ ___3.160___

   $P_3 = $ ___2.795___

   (b) Draw the cobweb starting at $P_0 = 2$ and give an approximation of P_{50}.

   Here it spirals into 3 $P_{50} \approx$ ___3___