Quiz 27

Name: _____

Find the equilibria of the following discrete dynamial system and classify the type of stability of each equilibrium.

$$m_{t+1} = -(m_t)^2 + 2m_t$$

Setting $-(m^*)^2 + 2m^* = m^*$, we move everything over to the other side and get

$$-(m^*)^2 + m^* = 0$$

so you get $m^* = 0$ and $m^* = 1$. The updating function is $f(x) = -x^2 + 2x$, so $f'(x) = -2x + 2$. For $m^* = 0$, we have $f'(0) = 2$, so $|f'(0)| = 2$ being bigger than 1 means 0 is untstable. On the other hand, $|f'(1)| = |(-2+2)| = 0$, which means 1 is stable.