ASSIGNMENT 26

1. $m_t = 0 \rightarrow m_{t+1} = -8$ so $m^* = 0$ not equil.

(D) $m_t = 1 \rightarrow m_{t+1} = -7 \rightarrow m^* = 1$ not equil.

$m_t = 2 \rightarrow m_{t+1} = 16 - 6 - 8 = 2 \rightarrow m^* = 2$ is equil.

2. $f(x) = 3x - 4 \rightarrow m_{t+1} = f(m_t) = 3m_t - 4$
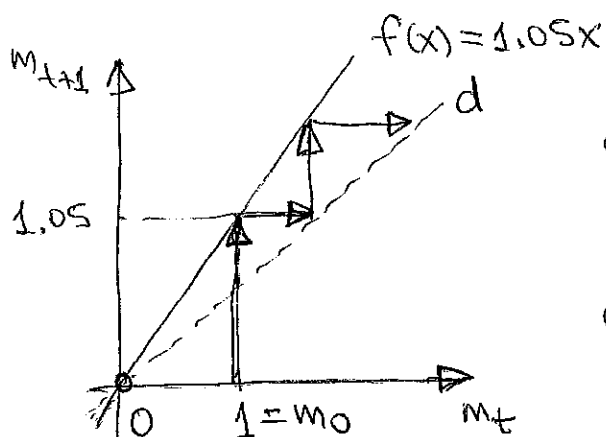
(A) so none!

3. FALSE ; $b^* = -1$ is an equilibrium point

of $b_{t+1} = b_t^3$, but not of $b_{t+1} = b_t^2$

(alternative: find pts of equilibrium:

$b_{t+1} = b_t^2 \sim b^* = 0, 1$

$b_{t+1} = b_t^3 \sim b^* = 0, 1, -1$)

4. FALSE ;

$f(x) = 1.05x$

cobwebbing
moves the
values $m_1, m_2, \ldots$
away from
$m^* = 0$

to prove this

5. FALSE ; we need to find <u>one</u> dynamical system for which $m^* = 0$ is not an equilibrium

simplest case: $m_{t+1} = 5$ (moves 0 to 5, so 0 is not an equilibrium)

or $m_{t+1} = 2m_t - 1$

$(2m^* - 1 = m^*$
$\rightarrow m^* = 1 \neq 0)$

etc.

6. TRUE ; $m_{t+1} = \dfrac{m_t - 1}{m_t + 1}$

$m_t m_{t+1} + m_{t+1} = m_t - 1$

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

$m_t = \dfrac{-1 - m_{t+1}}{m_{t+1} - 1} \dfrac{(-1)}{(-1)} = \dfrac{1 + m_{t+1}}{1 - m_{t+1}}$