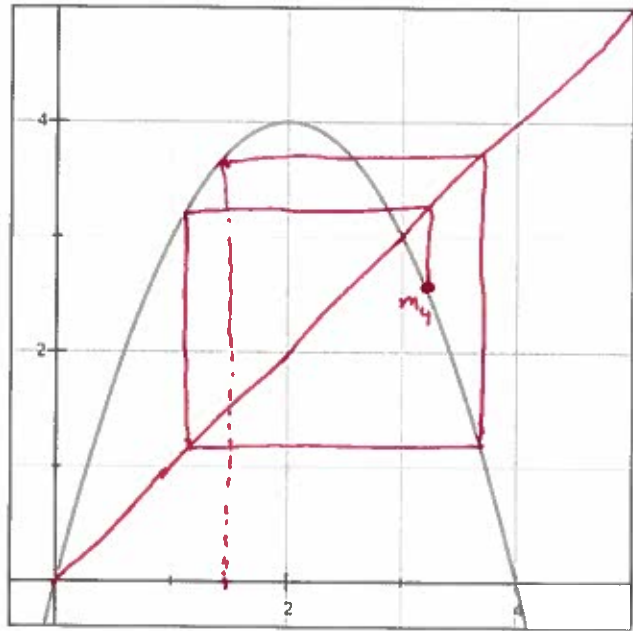


# Quiz 10

Name: key

1. (a) Make a cobweb diagram showing the first four steps of the discrete dynamical system  $m_{t+1} = f(m_t)$ , where  $f$  is graphed below.

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(+2)

- (b) What is the approximate value of  $m_4$ ?

2.5

(+1)

- (c) What are the equilibria of this discrete dynamical system?

$$\underline{m^* = 0} \quad \text{and} \quad \underline{m^* = 3}$$

(+1)

(+1)

2. Consider the discrete dynamical system  $m_{t+1} = \frac{4m_t}{m_t + 2}$ . Find the equilibria of this system.

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$$\boxed{\frac{4x}{x+2} = x} \quad (+2)$$

$$4x = x(x+2)$$

$$4x = x^2 + 2x$$

$$0 = x^2 - 2x = x(x-2)$$

$$\boxed{x = 0} \quad \text{and} \quad \boxed{x = 2}$$

(+2)

(+0)