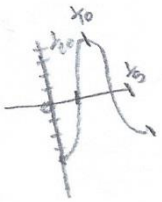
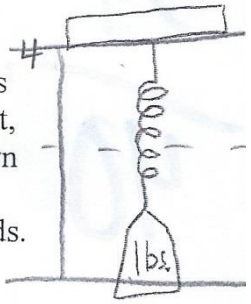


3. Let m(t) denote the distance of the weight above (+) or below (-) its equilibrium position at time t. When the experiment starts, I am holding the weight down at its minimum position. So when t=0 m(t)= its minimum. When I let go of the weight, it shoots up and goes past its equilibrium point by 4 inches. It then goes back down passes the equilibrium point again, and finally returns to its original minimum position and begins this cycle all over again. It does 10 of these cycles in 2 seconds. You recognize that the position of this graph can be modeled using a sinusoidal function



a. Give all pertinent information:

amplitude: |4|

Period: $\frac{1}{5}$

Phase shift: $\frac{1}{20}$

Vertical shift: 0

b. What is the equation for this function m(t)

$m(t) = 4\sin(10\pi t - \frac{\pi}{2}) - 1$

c. ***Bonus*** If you used a sine function to model the motion of the spring, now use an equivalent cosine function to model the equation.

$m(t) = -4\cos(10\pi t)$ ✓

+2

d. Graph this function: