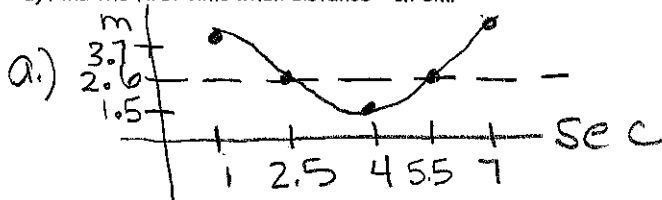


Warm-up: Oil Well

The jack on an oil well goes up and down, pumping oil out of the ground. As it does so, the distance varies sinusoidally with time. At time = 1 sec, the distance is at its maximum, 3.7 meters. At time = 4 sec, distance is at its minimum, 1.5 m.

- a) Sketch a graph.
- b) Write an equation.
- c) Find the distance when time = 5.5 sec.
- d) Find the first time when distance = 1.78m.



$$P \rightarrow b = \frac{2\pi}{D}$$

$$\frac{6b}{6} = \frac{2\pi}{6}$$

$$b = \frac{\pi}{3}$$

b.) $y = a \cos b(x - c) + d$

$$y = 1.1 \cos \frac{\pi}{3}(x - 1) + 2.6$$

c.) 2.6 m

d.) 3.3 sec