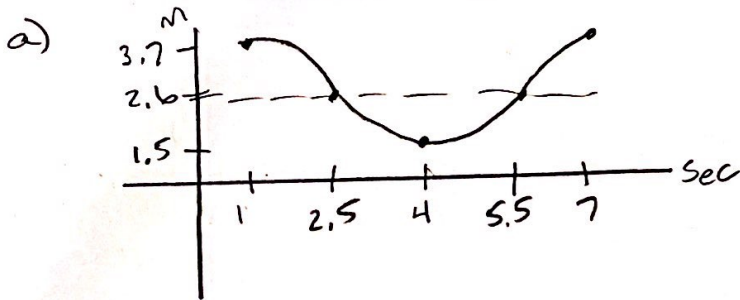


Warm-up: Oil Well

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.

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



b)

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

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

c)

$$x = 5.5 \quad y = 2.6 \text{ m}$$

2nd Calc - value

d)

2nd Calc - intersect
graph $y = 1.78$

$$x = 3.3 \text{ sec}$$

5 tick marks 3 tick marks

$$\frac{1+4}{2} = \frac{5}{2} = 2.5$$

1.5 increments $\frac{1.5+3.7}{2} = 2.6$

amp: $3.7 - 2.6 = 1.1$

b: $\frac{2\pi}{\text{period}} = \frac{2\pi}{6} = \frac{\pi}{3}$

VS: 2.6

PS: 1