

62 cont.

$$-(22.757) \cos(\omega t) = 12.25 \Rightarrow$$

4/4

$$\cos(\omega t) = -.53746 \Rightarrow$$

$$\omega t = 2.1394 \text{ radians.}$$

$$\therefore t = \frac{1}{\omega} (2.1394) = \sqrt{\frac{m}{k}} (2.1394)$$

$$= \sqrt{\frac{70}{56}} (2.1394) \Rightarrow$$

$$t = 2.3919 \text{ sec}$$

Next follow the mass in time from the height 35 meters to 50 meters. Let t be the amount of time this takes. Now we have free fall \Rightarrow

$$\frac{1}{2} g t^2 = 15 \Rightarrow t = \sqrt{30/g} = \sqrt{30/9.8} = 1.7496 \text{ sec}$$

A full period T will be $T = 2(\tau + t) \Rightarrow$

$$T = 8.2831 \text{ sec.}$$