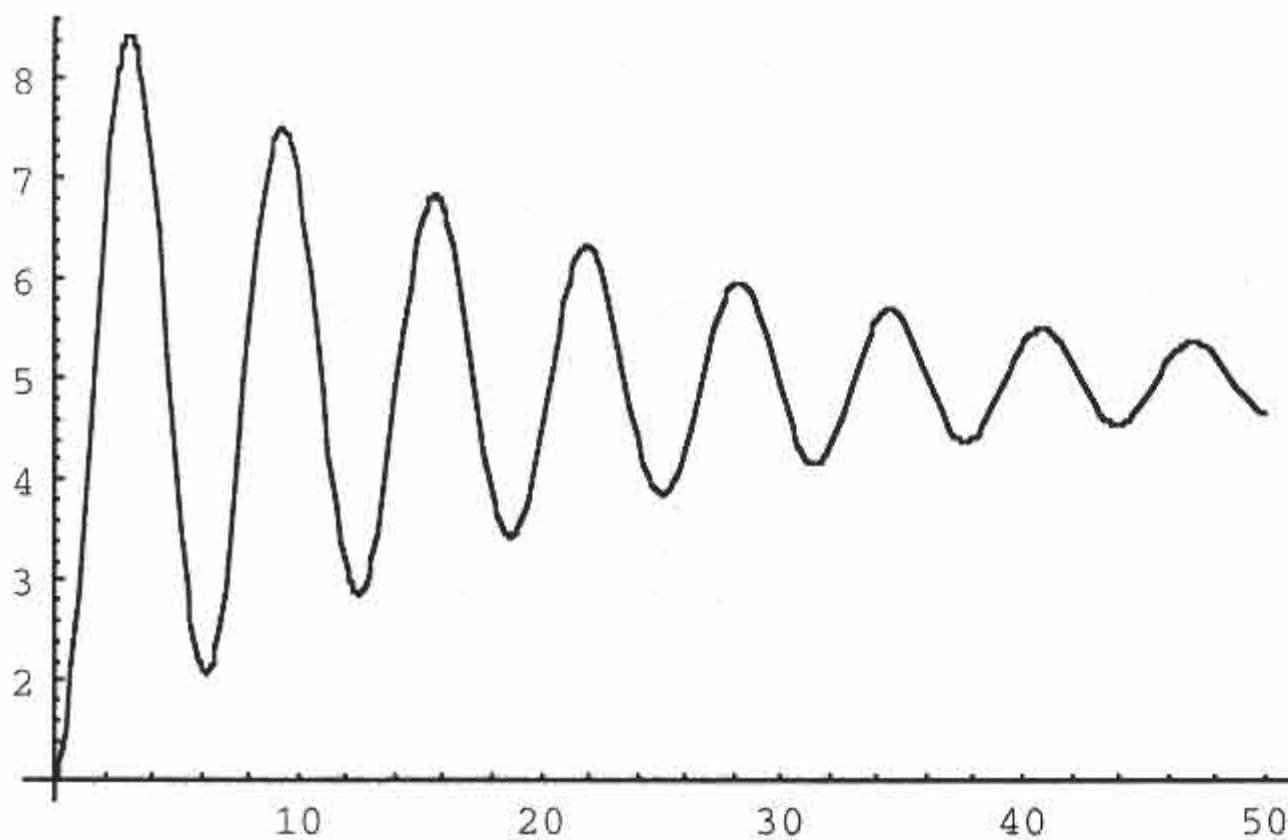


7) (25 points) A mass attached to a spring has motion described by the height function $h(t) = -4 e^{-0.05t} \cos(t) + 5$. The graph of this function looks like:



- Find the function describing the velocity of the mass at time t .
- Find the function describing the acceleration of the mass at time t .
- Find the function describing the jerk of the mass at time t .
- Calculate position, velocity, acceleration and jerk at the times $t=0$ and $t = \pi/2$.
- If the mass is a bungee jumper on a bungee cord, at which of these two times is she higher off the ground? When is she going faster? When does she feel more pressure? When is she getting more whiplash?

8) (10 points) A person lights a Roman candle fuse, then walks to a safe distance of 30 feet to watch it. If the rocket goes straight up at a rate of 15 feet/second, how fast is its distance from the observer increasing when it is 40 feet off the ground?