Homework #3

due Tuesday February 19

1. Tipler &Mosca Chapter 29 #66.
2. Tipler & Mosca Chapter 29 #83
3. Tipler & Mosca Chapter 29 #99
4. Hirose & Lonngren Chapter 1 #11
5. Consider a damped mechanical spring system with m=0.2 kg, a damping coefficient $f = 4\ \mathrm{N \cdot s/m}$ and spring constant $k = 80\ \mathrm{N/m}$. Suppose that this oscillator is driven by a force $F = F_o \cos \omega t$ where $F_0 = 2N$ and $\omega = 30\, s^{-1}$. If the steady state motion is described by $x = A\cos(\omega t + \delta)$, what are the values of A and δ? (Hint: This is the mechanical analogue driven RLC circuit.)