Ch. 11/12 Test
Vibrations, Waves and Sound

Main Topics:
1. Simple Harmonic Motion
   - Mass on a spring
   - pendulum
2. Waves and wave motion
   - vibrations produce waves
   - the wave equation!
   - reflection and transmission
   - miscellaneous other topics
     (A, \( \lambda \), T, f, resonance, refraction, diffraction, speed of waves, longitudinal vs. transverse… anything is fair game)
3. Standing waves
   - on strings
   - in columns of air
4. Beats (easy!)
5. Doppler Effect

Equations given to you on the test:
\[ F = ma \]
\[ PE = mgh \]
\[ KE = \frac{1}{2} mv^2 \]
\[ EPE = \frac{1}{2} kx^2 \]

Equations you should already know or memorize:
\[ T = \text{time over cycles} \]
\[ f = \text{cycles over time} \]
\[ f = \frac{1}{T} \]
\[ F = kx \]
\[ T = 2\pi \sqrt{\frac{m}{k}} \]
\[ T = 2\pi \sqrt{\frac{L}{g}} \]
\[ v = (f)(\lambda) \]
\[ x = A\cos\left(\frac{2\pi}{T}\right) \]
\[ f = f' \left[ \frac{(v_w \pm v_s)}{(v_w + v_s)} \right] \text{ or other versions you like =)} \]