Quiz 7 – PH241 **Name**_____ ☐ **Pledged**

$L = \frac{n\lambda}{2}$ $v = f\lambda$ $f = \frac{nv}{2L}$ $T = \frac{1}{f}$
for a standing wave on a string

(A) If a human being can hear up to 20000 Hz, how many overtones of a low A (f=27.5 Hz) can be heard by the human ear?

(B) Assume the speed on the string which produced this low A is 85.0 m/s, what is the length of the string?

A) $f = \frac{n\,v}{2L} = nf_1$ $20000 = n\,(27.5\text{Hz})$

$n = 727$

B) $V = f\lambda$ $85.0\text{m/s} = (27.5)\lambda$

$\lambda = 3.1\text{m}$

fundamental = $n = 1$

so $L = \lambda/2 = 1.55\text{m}$