

# Stuff for Thursday, March 29, 2012

- Please turn in homework up front and pick up your 1094 sheet.
- Quiz tomorrow on Q1 and Q2.
- Some Q1T answers: 6 T; 7 B; 8 B; 9 E; 10 B; 11 F
- 1094 Session 1 follow-ups:
  - Q1 standing waves answers look good (complete answers!)
  - PhET sims available free through H133 web page
  - Fourier transform coefficients  $A_n$  uniquely determined

$$f(x) = \sum_{n=1}^{\infty} A_n \sin\left(\frac{2\pi nx}{L}\right) \quad \left[ \text{use: } \int_{-L/2}^{L/2} \sin\left(\frac{2\pi mx}{L}\right) \sin\left(\frac{2\pi nx}{L}\right) = \begin{cases} 0 & \text{if } m \neq n \\ L/2 & \text{if } m = n \end{cases} \right]$$

- Q2T.2 answers: (a) A; (b) B; (c) C; (d) C; (e) A; (f) A
- Two-slit interference with slit separation  $d$

$$d \sin \theta_{nc} = n\lambda \quad \implies \quad \theta_{nc} = \sin^{-1} \frac{n\lambda}{d} \approx \frac{n\lambda}{d} \quad (\text{constructive})$$

- Diffraction: waves spread when passing through “slit” of width  $a$

$$a \sin \theta_{nd} = n\lambda \quad \implies \quad \theta_{nd} = \sin^{-1} \frac{n\lambda}{a} \approx \frac{n\lambda}{a} \quad (\text{destructive})$$