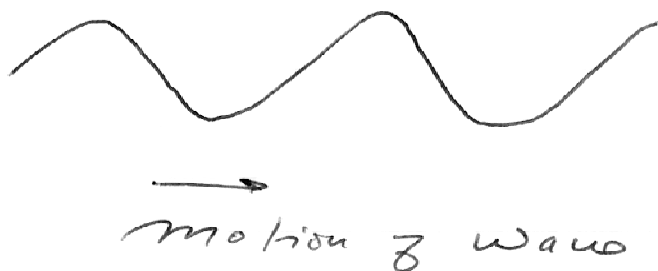


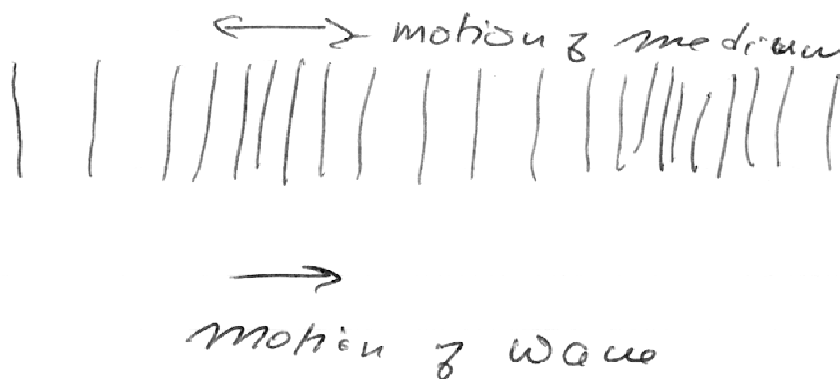
9/15/08 Review

- Hand in Homework due at beginning of class
- I will drop your lowest HW score,
- Transverse Waves



↕ motion of medium
(string particles)

- Longitudinal waves



(gas particles for sound)

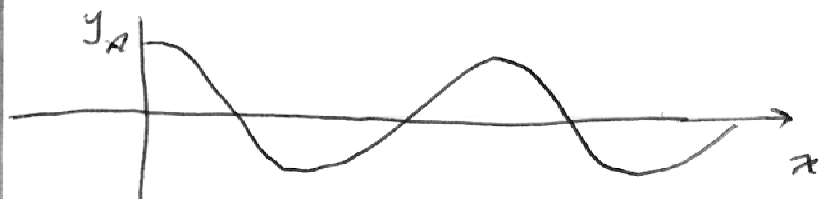
- Travelling wave on string

$$v = \sqrt{\frac{T}{\mu}}$$

T = tension

μ = mass per unit length

• Harmonic Solutions



$$y(x,t) = A \cos k(x \pm vt)$$

+ wave moving to left

- wave moving to right

The wave peaks when

$$k(x \pm vt) = 0, 2\pi, 4\pi, \dots$$

$$= 2n\pi \quad n = 0, \pm 1, \pm 2, \dots$$

all integers

Wave is zero when

$$k(x \pm vt) = \pm \frac{\pi}{2}, \pm \frac{3\pi}{2}, \pm \frac{5\pi}{2}, \dots$$

$$= \pm \frac{2n+1}{2} \pi \quad n = \text{integer}$$

negative peak

$$k(x \pm vt) = (2n+1)\pi$$

~~n~~ integer

- You should work these out
for $y(x,t) = A \sin(kx \pm \omega t)$

$$k = \frac{2\pi}{\lambda} \quad \omega = kv$$

- Wave Equation (1D)

$$\frac{\partial^2 f}{\partial x^2} = \frac{1}{v^2} \frac{\partial^2 f}{\partial t^2}$$

- quiz on Wednesday!