# We learned about waves in Physics 211

1-D Wave Equation

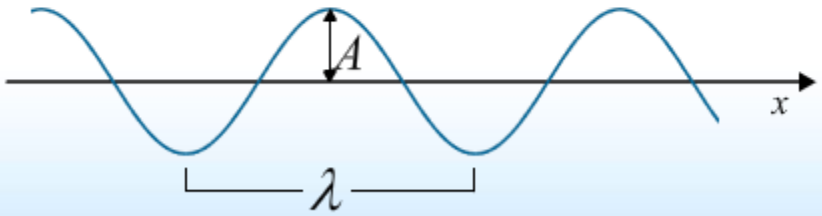
$$\frac{d^2h}{dx^2} = \frac{1}{v^2}\frac{d^2h}{dt^2}$$

Solution

$$h(x,t) = h_1(x - vt) + h_2(x + vt)$$

Common Example: Harmonic Plane Wave

$$h(x,t) = A\cos(kx - \omega t)$$




Variable Definitions

| | |
|---|---|
| Amplitude: | $A$ |
| Wave Number: | $k = \frac{2\pi}{\lambda}$ |
| Wavelength: | $\lambda$ |
| Angular Frequency: | $\omega = \frac{2\pi}{T}$ |
| Period: | $T$ |
| Frequency: | $f = \frac{1}{T}$ |
| Velocity: | $v = \lambda f = \frac{\omega}{k}$ |