$$y(x,t)$$

$$y(x) \quad = \quad e^{-x^2}$$

$$y(x) \quad = \quad e^{-(x-3)^2}$$

$$y(x) \quad = \quad e^{-(x-6)^2}$$

$$y(x,t) \quad = \quad e^{-(x \;-\; 3\frac{\mathrm{m}}{\mathrm{s}}t)^2}$$

$$y(x,t) \quad = \quad e^{-(x \;-\; vt)^2}$$

$$y(x,t) \quad = \quad Af(x)\; g(t) \quad = \quad A\sin\left(\frac{n\pi x}{L}\right)\; \cos(\omega t)$$

$$k \quad = \quad \frac{n\pi}{L}$$

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

$$y(x,t) \quad = \quad Af(x)\; g(t) \quad = \quad A\sin\left(kx\right)\; \cos(\omega t)$$

$$y(x,t) \quad = \quad A\sin\left(kx \;-\; \omega t\right)$$

$$\frac{\partial^2 y}{\partial x^2} \quad = \quad \frac{1}{v^2}\;\frac{\partial^2 y}{\partial t^2}$$

$$\frac{\partial^2 y}{\partial x^2} \quad = \quad -k^2\; A\sin(kx - \omega t)$$

$$\frac{\partial^2 y}{\partial t^2} \quad = \quad -\omega^2\; A\sin(kx - \omega t)$$

$$\frac{\partial^2 y}{\partial x^2} \quad = \quad \frac{k^2}{\omega^2}\;\frac{\partial^2 y}{\partial t^2} \quad = \quad \frac{1}{v^2}\;\frac{\partial^2 y}{\partial t^2}$$

$$v \quad = \quad \frac{\omega}{k}$$

$$\sin(\alpha)\cos(\beta) \quad = \quad \frac{1}{2}\left[\sin(\alpha+\beta) \;+\; \sin(\alpha-\beta)\right]$$

$$y(x,t) \quad = \quad A\ \sin(kx)\ \cos(\omega t)$$

$$y(x,t) \quad = \quad \frac{A}{2}\left[\sin(kx+\omega t)\ +\ \sin(kx-\omega t)\right]$$

$$\omega_n \quad = \quad \frac{n\pi}{L}\sqrt{\frac{T}{\mu}}$$

$$y(x,t) \quad = \quad \frac{A}{2}\left[\sin\left(\frac{n\pi}{L}x+\frac{n\pi}{L}\sqrt{\frac{T}{\mu}}t\right)\ +\ \sin\left(\frac{n\pi}{L}x-\frac{n\pi}{L}\sqrt{\frac{T}{\mu}}t\right)\right]$$

$$y(x,t) \quad = \quad \frac{A}{2}\left[\sin\left\{\frac{n\pi}{L}(x+\sqrt{\frac{T}{\mu}}t)\right\}\ +\ \sin\left\{\frac{n\pi}{L}(x-\sqrt{\frac{T}{\mu}}t)\right\}\right]$$

$$y(x,t) \quad = \quad y\,(x\ \pm\ vt\,) \quad = \quad y\left(x\ \pm\ \sqrt{\frac{T}{\mu}}t\right)$$

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

$$y(x,t) \quad = \quad A\ \sin\left(\frac{n\pi x}{L}\right)\ \cos(\omega_n t)$$

$$y(x,t) \quad = \quad \frac{A}{2}\left[\sin\left(\frac{n\pi x}{L}\ +\ \omega_n t\right)\ +\ \sin\left(\frac{n\pi x}{L}\ -\ \omega_n t\right)\right]$$