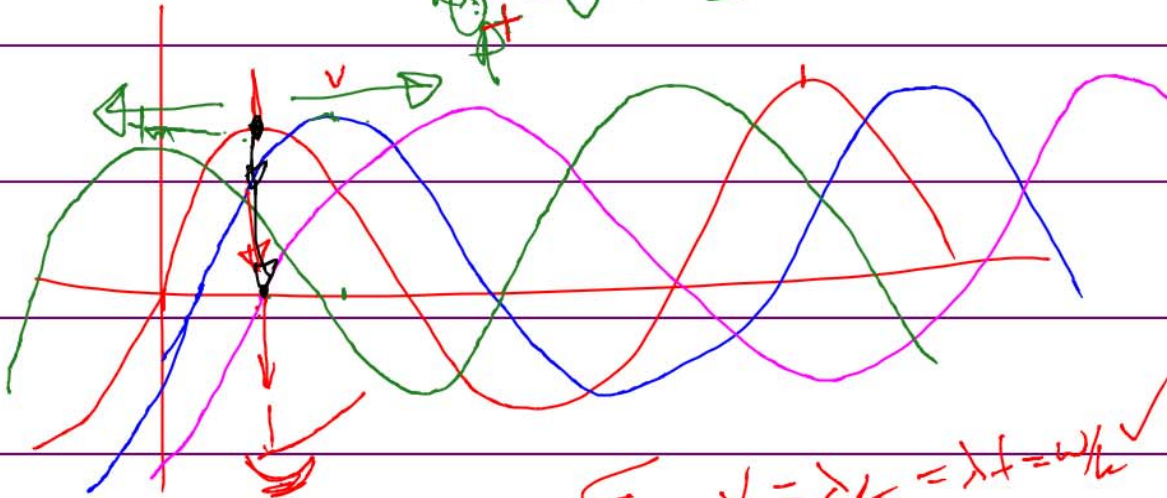


$$a + b = \text{const} = 4$$

$$y(x,t) = y_m \sin(kx - \omega t + \phi)$$

$$kx - \omega t + \phi = \text{const} = \pi/2$$



$$\sqrt{\frac{T}{\mu}} = v \Rightarrow \lambda/T = \lambda f = \omega/k$$

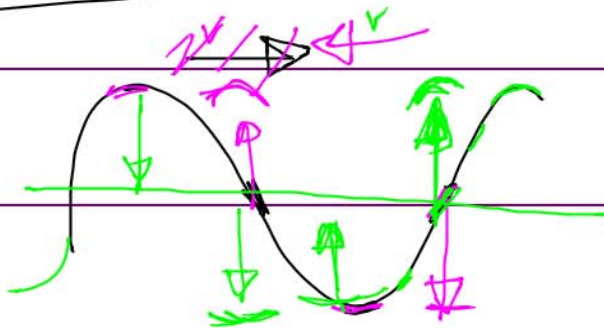
the velocity of the medium (rope)

transverse  
velocity

$$y = y_m \sin(kx - \omega t + \phi)$$

$$u_t = \frac{dy}{dt} = y_m \omega \cos(kx - \omega t + \phi) \equiv \dot{y}$$

$$u_{f, \text{max}} = \omega y_m$$



$$\frac{d^2 y}{dt^2} = -\omega^2 y_m \sin(kx - \omega t + \phi)$$

$$a = -\omega^2 y$$

$\omega = \frac{2\pi}{T}$