$$\mu \equiv \frac{\text{mass}}{\text{length}}$$

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

$$\text{velocity } v = \frac{\omega}{k} = f\lambda$$

$$y_1(x,t) = A\sin(kx - \omega t)$$

$$y_2(x,t) = A\sin(kx + \omega t)$$

$$y_1 + y_2 = 2A\sin(kx)\,\cos(\omega t)$$

$$2A\sin(kx) = 0$$

$$\text{nodes at } x = 0,\ \frac{\pi}{k},\ \frac{2\pi}{k},\ \frac{3\pi}{k},\ \ldots,\ \frac{N\pi}{k}$$

$$\text{nodes at } x = 0,\ \frac{1}{2}\lambda,\ \lambda,\ \frac{3}{2}\lambda,\ \ldots,\ \frac{N}{2}\lambda$$

$$2A\sin(kx) = \pm 2A$$

$$\text{antinodes at } x = \frac{\pi}{2k},\ \frac{3\pi}{2k},\ \frac{5\pi}{2k},\ \ldots,\ \frac{(2N+1)\pi}{2k}$$

$$\text{antinodes at } x = \frac{1}{4}\lambda,\ \frac{3}{4}\lambda,\ \frac{5}{4}\lambda,\ \ldots,\ \frac{(2N+1)}{4}\lambda$$

$$\mu_s = _____ \pm _____ \text{ kg/m}$$

$$v = _____ \pm _____ \text{ m/s}$$