

Problem 3. [10 points]

Two sinusoidal waves $y_1(x, t)$ and $y_2(x, t)$ have the same wavelength and travel the same direction along a string. Their amplitudes are $A_1 = 4.0$ mm and $A_2 = 3.0$ mm and their phase constants are 0 and $\frac{\pi}{3}$ respectively.

- What is the amplitude A' and phase constant β of the resultant wave?
- Write the resultant wave in the form

$$y'(x, t) = A' \sin(kx - \omega t + \beta). \quad (2)$$

Problem H4. [10 points]

The system of coupled oscillators shown below is subjected to the applied force $F = F_0 \cos(\omega t)$, applied to the mass m_1 . Find the steady state solution. Sketch the amplitude and phase of each oscillator as functions of ω .

