1 Interference

$$\begin{aligned} & sin(kx - wt) + sin(kx + wt) \\ = \; & 2sin\frac{2kx}{2}cos\frac{2\omega t}{2} \\ = \; & sin(\omega_1 t) + sin(\omega_2 t) \\ = \; & 2sin(\frac{\omega_1 + \omega_2}{2}t) + 2cos(\frac{\omega_1 - \omega_2}{2}t) \end{aligned}$$

$$\begin{aligned} sin(a) + sin(b) &= 2sin\frac{a+b}{2}cos\frac{a-b}{2} \\ cos(a) + cos(b) &= 2cos\frac{a+b}{2}cos\frac{a-b}{2} \end{aligned}$$

- This is a standing wave.
- Where is the second wave coming from? The reflection