

## ODE Solutions

$$A''(x) + \lambda A(x) = 0 \quad \lambda \in \mathbb{R}$$

Case 1:  $\lambda < 0$

$$A(x) = a \cosh(\sqrt{S} x) + b \sinh(\sqrt{S} x) \quad \begin{matrix} (a, b) \in \mathbb{R} \\ S = -\lambda \end{matrix}$$

Case 2:  $\lambda = 0$

$$A(x) = ax + b$$

$$S = 0$$

Case 3:  $\lambda > 0$

$$A(x) = a \cos(\sqrt{\lambda} x) + b \sin(\sqrt{\lambda} x)$$