

$$u(x,t) = \sum_{n=1}^{\infty} b_n \sin(n\pi x) e^{-n^2\pi^2 t}$$

$$100 = f(x) = \sum_{n=1}^{\infty} b_n \sin(n\pi x) \quad 0 < x < L=1$$

$$\begin{cases} u_t = u_{xx} & 0 < x < 1 \\ u = 0 & \text{at } x=0 \text{ and } x=1 \\ u(x,0) = 100 \end{cases}$$