

$$\begin{aligned}
 & \Rightarrow \sqrt{x} = -\frac{1}{4} \Rightarrow \frac{1}{4} = -\frac{1}{\sqrt{x}} \Rightarrow \frac{1}{4} = -x^{-\frac{1}{2}} \\
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 \end{aligned}$$

دستگاه معادلات

$$\Rightarrow u = \frac{2 \cos(x/2)}{2 - x \cos(x)}$$

$$\cos(x) = \frac{1}{1 - \cos(x)} \Rightarrow \cos(x) = \frac{1}{1 - \cos(x)} + \frac{1}{1 - \cos(x)}$$

$$u = \frac{1}{1 - \cos(x)} \Rightarrow \cos(x) = \frac{1}{1 - \cos(x)}$$

$$\begin{aligned}
 & \text{پس:} \\
 & \text{①} = \text{②} \Rightarrow \text{①} = \text{②} \Rightarrow \text{①} = \text{②} \Rightarrow \text{①} = \text{②} \\
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 \end{aligned}$$

$$\begin{cases}
 u_x + 2u_y = u \\
 u(x,0) = \cos(x)
 \end{cases}$$

دستگاه معادلات

$$\Rightarrow \frac{\partial}{\partial x} (x^2 u_x + y u_y + x^2 + y^2) = 0$$

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②

$$\Rightarrow \frac{\partial}{\partial x} (3u_{xx} + u_{xy} - 2u_{yy}) = 0$$

$$\Rightarrow u_{xx} + u_{xy} = \frac{\partial}{\partial x} (2x + 3y), u_{xy} + u_{yy} = \frac{\partial}{\partial x} (u + 3y)$$

دستگاه معادلات

$$\text{①} \begin{cases}
 u = \frac{1}{2}(2x+3y) + g(x-y) \\
 u_x = 2 \frac{\partial}{\partial x} + g' \\
 u_y = 3 \frac{\partial}{\partial y} - g'
 \end{cases} \Rightarrow u_x + u_y = 5 \frac{\partial}{\partial x} (2x+3y)$$

$$\left. \begin{aligned} \int_{-\infty}^{\infty} U(x) dx &= \int_{-\infty}^{\infty} U(x) dx \\ \int_{-\infty}^{\infty} U(x) dx &= \int_{-\infty}^{\infty} U(x) dx \end{aligned} \right\}$$

③ $U = \psi + \psi(x) \Rightarrow \psi = \sin(x)$

$$b_n = \frac{1}{\pi} \int_{-\pi}^{\pi} f(x) \sin(nx) dx = \frac{1}{2} \int_{-\pi}^{\pi} f(x) \sin(nx) dx$$

$$= \int_{-\pi}^{\pi} f(x) \sin(nx) dx$$

② $U(x) = a_0 + \sum_{n=1}^{\infty} a_n \cos(nx) + \sum_{n=1}^{\infty} b_n \sin(nx)$

$$2 \int_0^{\pi} \sin^2(x) dx = \sum_{n=1}^{\infty} c_n \sin^2(nx)$$