

1. 求解  $u_t - 3u_x = 0$ ,  $u(x, 0) = e^{-x^2}$

2. 求解  $u_t + 3u_x = 0$ ,  $u(x, 0) = \sin x$

3. 求解  $3u_y + u_{xy} = 0$  (利用变换  $v = uy$ )

4. 求  $(1+x^2)u_x + u_y = 0$  的通解

5. 求解  $au_x + bu_y + cu = 0$

6. 求解  $\begin{cases} u_x + u_y + u = e^{x+2y} \\ u(x, 0) = 0 \end{cases}$