

The background of the slide is a faded image of the Jiaotong University gate. The gate is a large, white, curved structure with the university's name in English, "JIAOTONG UNIVERSITY", on the right side and in Chinese, "交通大学", on the left side. The gate is flanked by trees and a building with a red roof. A large, dark purple rectangular box is superimposed over the center of the image, containing the title "作业4" in yellow text.

作业4

2021-2022学年第2学期

作业4

1. (上机题, 教材36页, 习题第8题) 分别用0.618法和三点二次插值法求 $\varphi(\alpha) = 1 - \alpha e^{-\alpha^2}$ 得极小点, 初始区间取 $[0, 1]$, $\varepsilon = 0.01$.
2. (教材36页, 习题第5题) 对正定二次函数 $f(\mathbf{x}) = \frac{1}{2}\mathbf{x}^T G \mathbf{x} + \mathbf{b}^T \mathbf{x}$, 在点 \mathbf{x}_k 处求出沿着下降方向 \mathbf{d}_k 的精确线性搜索步长 α_k .
3. (教材37页, 习题第11题) 证明: 若 $\rho < 1/2$, 则正定二次函数精确线性搜索的步长满足Goldstein准则.
4. (教材37页, 习题第10题) 根据 $\varphi(\alpha_i), \varphi'(\alpha_i) (i = 1, 2)$, 构造满足 $\varphi(\alpha_i) = p(\alpha_i), \varphi'(\alpha_i) = p'(\alpha_i) (i = 1, 2)$ 的两点三次多项式 $p(\alpha)$, 求出其极小点.