

# 4th Report for Topics in Mathematical Optimization

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1. Prove Corollary 8.2.

2. Given a sequence  $\{\alpha_k\}_{k=0}^{\infty}$  such that  $\alpha_k \in (0, 1]$ , define  $\lambda_\ell := \prod_{j=0}^{\ell} (1 - \alpha_j)$  for  $\ell = 0, 1, \dots$ . Prove that if  $\sum_{k=0}^{\infty} \alpha_k = \infty$ , then  $\lambda_\ell$  converges to zero.