

Chapter 3: Convexity

The Separation Theorem (3.29; read proof in 4.28)

Farkas' Lemma (3.37; read proof in 10.10)

Characterization of convex functions in C^1 (3.61)

Chapter 4: Primal optimality conditions

The Fundamental Theorem of global optimality (4.3)

Necessary optimality conditions, C^1 case (4.22)

Necessary and sufficient global optimality conditions (4.23)

The Separation Theorem (4.28)

Chapter 5: Primal–dual optimality conditions

Karush–Kuhn–Tucker necessary conditions (5.29)

Sufficiency of the Karush–Kuhn–Tucker conditions for convex problems (5.49)

Chapter 6: Lagrangian duality

Relaxation Theorem (6.1)

Weak Duality Theorem (6.5)

Global optimality conditions in the absence of a duality gap (6.8)

Chapter 8: Linear programming models

Existence and properties of optimal solutions (8.10)

Chapter 9: The Simplex method

Finiteness of the Simplex method (9.11)

Chapter 10: LP duality and sensitivity analysis

Weak Duality Theorem (10.4)

Strong Duality Theorem (10.6)

Farkas' Lemma (10.10)

Complementarity Slackness Theorem (10.11)

Complementarity Slackness Theorem (10.12)

[(10.11) and (10.12) are proven similarly.]

Chapter 13: Constrained optimization

Global convergence of a penalty method (13.3)