Key Concepts

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Convex Sets (chapter 2)
      - Basic definition -> x, and x2E C => 0x1+ (1-0)x2 EC
      - Relationship to
             - Lines | line Segments 20; =1
              - Subspaces > x1, x2, -, xn > 0, x1+--+ boxn
       - Cones and Convex Cones

- Hyperplanes \Rightarrow f(x) = ax+b \Rightarrow dim(f(x)) = n-1
        - Half spaces \Rightarrow Q^Tx+b \leq 0 or Q^Tx+b \geqslant 0
- Ellipsoids \Rightarrow x^TQx = Q; Q \geq 0
         - Norm come and Second-order come
                                                                            (2 0 8)
         - Polyhedra / polytopes
         - Positive Semidefinite come
                                                                              18 T
          - Hulls
                 - Affine hull
                  - Convex hull
                   - Certic hull
           - Operations that preserve convexity
                    - (Infinite) intersection
                     - Affine functions
                            - made of a convex set
                     - Preimage (inverse image) of a corner set
- Image of a convex set under the Perspective Junction
 Convex functions (chapter 3) > f(0x,+(1-0)x2) &
- Basic (Jensen's inequality-based) definition + (1-0)f(x1)
         - First-order condition
                                                                        4 6-(0)
         - Second-order condition
- "Restriction to an arbitrary line" Condition
10g det(x) - computation of a gradient

10g det(x) - computation of a directional derivative

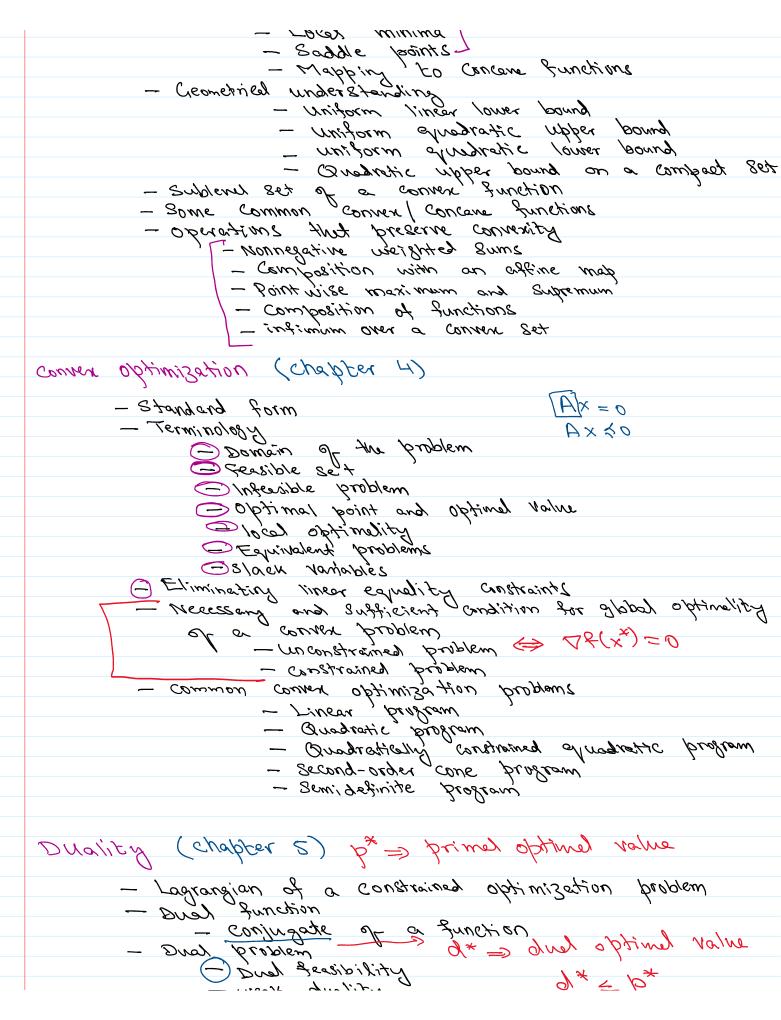
(det(x)) - Epigraph definition

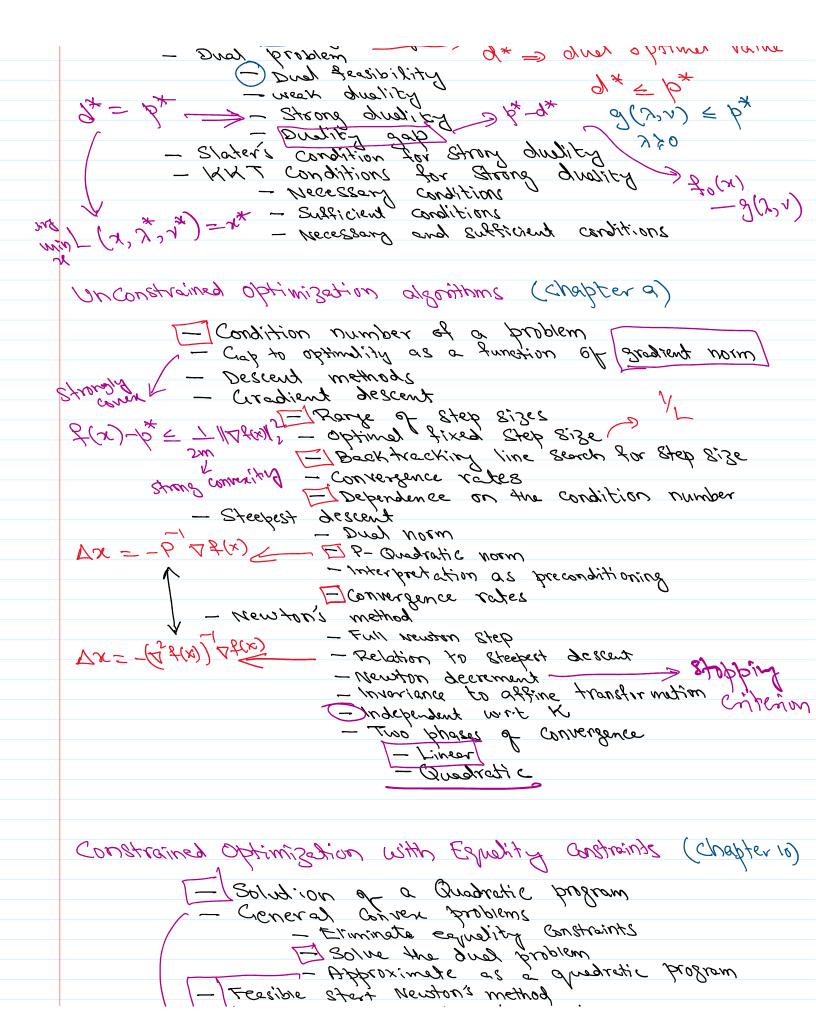
- strict convexity
  - Lipschitz continuous gradients (Smooth functions)

- Strong convexity

- Chobal minima Stationary points

- Local minima
                             - Saddle points -
- Mapping to Concare functions
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P TS Symmetric

Program

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