UNIT-1

LPP graphically solution:

- Special Cases:
  - Multiple Solution: mention multiple solution
  - Unbounded Solution: no solution
  - Infeasible solution: no solution
  - Redundancy: remove the redundant expression as it has no effect on the result

Application of Linear Programming

Finance:

- **Portfolio Selection:** LPP helps build optimal investment portfolios by maximizing expected return or minimizing risk within constraints like budget limitations and diversification requirements.
- **Capital Budgeting:** Companies can use LPP to allocate capital efficiently across different investment projects, considering factors like project returns, budget constraints, and risk tolerance.

Marketing:

- **Media Mix Optimization:** LPP helps determine the optimal allocation of advertising budget across different media channels (TV, print, online) to maximize reach or brand awareness within budget constraints.
- **Product Pricing:** LPP can be used to set optimal prices for products considering factors like production costs, demand elasticity, and competitor pricing.
- **Sales Force Deployment:** LPP helps allocate salespeople efficiently to different territories or customer segments, maximizing sales or customer satisfaction within resource constraints.

Operations Management:

- **Production Planning:** LPP is used to determine the optimal production plan for different products, considering factors like production capacity, raw material availability, and demand forecasts.
- **Inventory Management:** LPP helps determine optimal inventory levels for different products, minimizing inventory holding costs while avoiding stockouts.
- **Supply Chain Management:** LPP can be used to optimize transportation and logistics decisions within a supply chain network, minimizing transportation costs and delivery times.

Data Envelopment Analysis (DEA):

DEA is a technique used to assess the relative efficiency of similar organizational units (e.g., branches, departments) based on inputs and outputs. While not strictly an LPP application, DEA can leverage LPP models to calculate efficiency scores. These scores help identify the most efficient units and provide benchmarks for improvement for less efficient ones.