

Math 170 Review Sheet for the second test

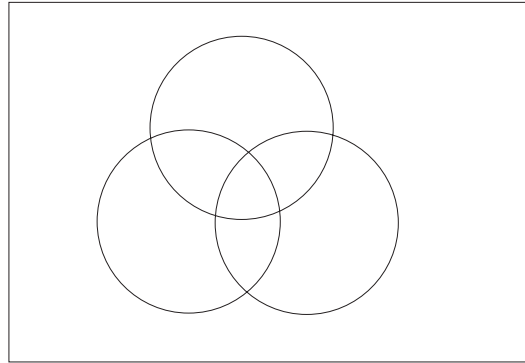
Some important concepts and definitions:

linear inequalities
solution of an inequality
feasible region
sketching the feasible region of several linear inequalities of two variables
LP problem
objective function
constrains
optimal value and solution
graphical method for solving an LP problem
standard maximization problem
slack variable
tableau
active and inactive variables
rules for selecting the pivot column
rules for selecting the pivot
test ratio
departing and entering variables
surplus variable
using the simplex method to solve a minimization problem
set, element, subset, empty set, universal set
finite and infinite sets,
Venn diagram
union of two sets $A \cap B$ intersection of two sets $A \cup B$
disjoint
Cartesian product of two sets
cardinality $n(A)$. $n(A) + n(B) = n(A \cap B) + n(A \cup B)$
 $n(A) + n(A') = n(S)$
 $n(A \times B) = n(A)n(B)$
addition principle
multiplication principle
decision algorithm
 n factorial $n! = n \times (n - 1) \dots \times 2 \times 1$
permutation of n items taken r at a time: $P(n, r) = \frac{n!}{(n-r)!}$
combination of n items taken r at a time: $C((n, r)) = P(n, r)/r! = \frac{n!}{r!(n-r)!}$
 $C(n, r) = C(n - r)$

Find the optimal solution and optimal value of the following maximization problem.

$$\begin{aligned} \text{maximize } p &= 3x + 4y + 6z \\ \text{subject to } & 5x - y + 3z \leq 15 \\ & 2x + 2y + 3z \leq 25 \\ & 4x + 2y + 3z \leq 24 \end{aligned}$$

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$$n(A) = 10, n(B) = 19, n(S) = 140$$

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A test requires that you answer first Part A and then either Part B or Part C. Part A consist of 4 true-false questions, Part B consists of 4 multiple-choice questions with 1 correct answer out of 5, and part C consist of 3 questions with 1 correct answer out of 6. How many different completed answer sheets are possible?

There are two handouts about the simplex method and general LP problem. If you didn't get them, you can download them on my website which is also containing the solution of quiz and some hints of the homework. Good luck.