Finite Mathematics Formulas and Miscellany

Crown's Rules must be used before the simplex algorithm if there are negative numbers in the rightmost column above the horizontal line because a solution from this matrix does not represent a corner point of the feasible region.

A. There is no solution if a row above the horizontal line contains all positive values except in the rightmost column.

B. If this is not the case, to find the pivot column:

1. Choose the first negative number from the top in the rightmost column above the horizontal line.
2. Choose the most negative number in the row. That will indicate the pivot column.

C. To find the pivot row:

1. Divide nonnegative entries in the rightmost column by positive entries in the pivot column. The smallest nonnegative quotient will determine the pivot row.
2. If the step above is not possible, divide negative entries in the rightmost column by negative entries in the pivot column. The largest positive quotient will determine the pivot row.

D. Pivot as usual, by first turning the pivot element into a one, and then turning all other elements into that column into zeros.

E. Repeat the preceding steps until there are no negative numbers in the rightmost column. Then continue using the simplex method until there are no negative numbers on the left side below the horizontal line.

$I = Prt$ $\quad A = P(1 + rt)$ $\quad A = P\left(1+\frac{r}{m}\right)^{mt} = P(1+i)^n$ $\quad A = pe^{rt}$ $\quad A = P(1-r)^t$

$$A = p\left[\frac{\left(1+\frac{r}{m}\right)^{mt}-1}{\frac{r}{m}}\right] = p\left[\frac{(1+i)^n-1}{i}\right] \qquad P = p\left[\frac{1-\left(1+\frac{r}{m}\right)^{-mt}}{\frac{r}{m}}\right] = p\left[\frac{1-(1+i)^{-n}}{i}\right] \qquad APR = \left(1+\frac{r}{m}\right)^m - 1 = (1+i)^m - 1$$

$$p = \frac{A\left(\frac{r}{m}\right)}{\left(\left(1+\frac{r}{m}\right)^{mt}-1\right)} = \frac{(Ai)}{(1+i)^n} \qquad p = \frac{\left(\frac{r}{m}\right)P}{1-\left(1+\frac{r}{m}\right)^{-mt}} = \frac{iP}{1-(1+i)^{-n}} \qquad n(A\cup B) = n(A)+n(B)-n(A\cap B) \qquad n! = 1\cdot 2\cdot 3\cdot \ldots \cdot n \qquad 0! = 1$$

$$P(n,r) = \frac{n!}{(n-r)!} \qquad C(n,r) = \frac{n!}{r!\cdot(n-r)!} \qquad P(E) = \frac{n(E)}{n(S)} \qquad P(E) = 1-P(E')$$

$$\text{odds for } E = \frac{P(E)}{P(E')} = P(E):P(E') \qquad E(X) = x_1p_1 + x_2p_2 + x_3p_3 + \ldots + x_np_n \qquad P(A\cup B) = P(A)+P(B)-P(A\cap B)$$

$$P(A\mid B) = \frac{P(A\cap B)}{P(B)},\ \text{if } P(B)\neq 0 \qquad P(F\mid E) = \frac{P(F)\cdot P(E\mid F)}{P(F)\cdot P(E\mid F)+P(F')\cdot P(E\mid F')} \qquad C(n,r)\cdot p^r\cdot q^{n-r} \qquad z = \frac{x-\mu}{\sigma}$$

$$\mu = \bar{x} = \frac{x_1+x_2+\ldots+x_n}{n} = \frac{\sum x}{n} \qquad s^2 = \frac{\sum(x-\bar{x})^2}{(n-1)} \qquad s = \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}} \qquad \sigma = \sqrt{\frac{\sum(x-\mu)^2}{n}}$$

$$s = \sqrt{\frac{\sum\left[(x-\bar{x})^2\cdot f\right]}{(n-1)}} = \sqrt{\frac{\sum\left(f\cdot x^2\right)-n\cdot\bar{x}^2}{(n-1)}} \qquad \sigma^2 = \frac{\sum(x-\mu)^2}{n} \qquad \sigma = \sqrt{\frac{\sum\left[(x-\mu)^2\cdot f\right]}{n}}$$

Standard Deck of Cards

Face cards: Jack, Queen, King

Clubs	A♣	2♣	3♣	4♣	5♣	6♣	7♣	8♣	9♣	10♣	J♣	Q♣	K♣
Diamonds	A♦	2♦	3♦	4♦	5♦	6♦	7♦	8♦	9♦	10♦	J♦	Q♦	K♦
Hearts	A♥	2♥	3♥	4♥	5♥	6♥	7♥	8♥	9♥	10♥	J♥	Q♥	K♥
Spades	A♠	2♠	3♠	4♠	5♠	6♠	7♠	8♠	9♠	10♠	J♠	Q♠	K♠

Outcomes of Rolling Two Dice (1 black, 1 white)