BASIC Programming II (Built-in Functions)

BASIC built in functions are predefined functions that performs a wide range of operation. A function is a structure that simplifies a complex operation into a single step. BASIC has a number of built-in functions that greatly extends its capability. They include the following:

1. **SQR Function**: The SQR function calculates the square root of a number. The general form of the function is SQR(X)
   Example:
   SQR(9) = 3
   SQR(2) = 1.414214

2. **INT Function**: The INT function finds the greatest integer less than or equal to a number. The general form of the function is INT(X)
   Example
   INT(15.46) = 15
   INT(-15.46) = -16
   INT(15.56) = 15
   INT(-15.56) = -16

3. **CINT Function**: CINT means Integer Conversion. This function is used to convert a number into an integer. It rounds off the number to the nearest integer value.
   Example
   CINT(15.46) = 15
   CINT(-15.46) = -15
   CINT(15.56) = 16
   CINT(-15.56) = 16

4. **Fix Function**: This function truncates the number into an integer. The General form of the function is FIX (X)
   Example
   FIX(15.46) = 15
   FIX(-15.46) = -15
   FIX(15.56) = 15
   FIX(-15.56) = -15

5. **ABS Function**: ABS means absolute. It is used to find the absolute value of a number. Absolute value of a number means the number without any sign. The general form of the function is ABS(X)
   Example
   ABS(+3.4) = 3.4
   ABS(-3.4) = 3.4

6. **RND Function**: RND means random. RND is a special function that gives us a random number between 0 and 1
   Example

PRINT RND
PRIND RND

This program will print RND twice. Notice that you'll get to numbers that appear to be unpredictable and random. But, try running the program again. You'll get the same random numbers.

7. **COS, SIN, TAN, and ATN Function**

The COS, SIN, TAN, and ATN trigonometric functions are used to find the Cosine, Sine, Tangent and Arctangent of a particular numeric expression. The general form is:

COS(X)
SIN(X)
TAN(X)
ATN(X)

8. **MODE Function**: It means remainder. This function returns the remainder. The general form of the function is X MOD Y

Example:
16 MOD 5 = 1
30 MOD 5 = 0

9. **SGN Function**: It means sign. This returns the sign of the input number in numeric value. The general form of the function is SGN(X).

Examples
SGN(54) = 1
SGN(-54) = -1
SGN(0) = 0

10. **EXP Function**: It is used to find the natural exponent of x, where e = 2.718281828. the general form of the function is EXP(X)

Example
EXP(4) = 54.59815
EXP(-5) = 6.737947E-03

11. **LOG Function**: This function returns the natural logarithm of a numeric expression (any positive numeric expression). The syntax is LOG(X)

BASIC NOTATION

a. = SQR(B^2-4*A*C)/2*A
b. (x-y)/(x+y) = (X-Y)/(X+Y)
c. = EXP(X^2+Y)-SIN(X+N*Y)
d. b=1/4ac = B = 1/4*A*C

BASIC PROGRAM

1. Find the square root of numbers in a given range

```
10  REM program to find the square root of numbers
20  INPUT "Enter the first number of range"; A
30 INPUT "ENTER the last number of range"; B
40 FOR I = A TO B
```

```
50  PRINT “the square root of “; A; “is”; SQR(A)
60  NEXT I
70  END
```

2. Find the Sine of unknown values

```
10  REM Program to find the Sine of unknown value
20  INPUT “Enter the number”; A
30  LET S = SIN(A)
40  PRINT “The Sine of”; A; “is”; S
50 END
```

3. Plot Cosine Graph

```
10  REM Program to plot cosine graph
20  SCREEN 13
30  FOR X% = 0 TO 360
40  PSET (X%, (COS(X% * 0.017453) * 50) + 50), 15
50  NEXT X%
60  END
```