

Fortran Intrinsic Functions

- the name and meaning of the function such as **ABS()** and **SQRT()**
- the number of arguments
- the range of the argument
- the types of the arguments
- the type of the return value or the function value

1- Mathematical functions:

<i>Function</i>	<i>Meaning</i>	<i>Arg. Type</i>	<i>Return Type</i>
ABS(x)	absolute value of x	INTEGER	INTEGER
		REAL	REAL
SQRT(x)	square root of x	REAL	REAL
SIN(x)	sine of x radian	REAL	REAL
COS(x)	cosine of x radian	REAL	REAL
TAN(x)	tangent of x radian	REAL	REAL
ASIN(x)	arc sine of x	REAL	REAL
ACOS(x)	arc cosine of x	REAL	REAL
ATAN(x)	arc tangent of x	REAL	REAL
EXP(x)	<u>exp(x)</u>	REAL	REAL
LOG(x)	natural logarithm of x	REAL	REAL

- **Note** , all trigonometric functions use radian rather than degree for measuring angles

2- Conversion functions:

<i>Function</i>	<i>Meaning</i>	<i>Arg. Type</i>	<i>Return Type</i>
INT(x)	integer part x	REAL	INTEGER
NINT(x)	nearest integer to x	REAL	INTEGER
FLOOR(x)	greatest integer less than or equal to x	REAL	INTEGER
FRACTION(x)	the fractional part of x	REAL	REAL
REAL(x)	convert x to REAL	INTEGER	REAL

EX:

```
INT(-3.5) → -3  
NINT(3.5) → 4  
NINT(-3.4) → -3  
FLOOR(3.6) → 3  
FLOOR(-3.5) → -4  
FRACTION(12.3) → 0.3  
REAL(-10) → -10.0
```

3- Other functions:

<i>Function</i>	<i>Meaning</i>	<i>Arg. Type</i>	<i>Return Type</i>
MAX(x1, x2, ..., xn)	maximum of x1, x2, ... xn	INTEGER	INTEGER
		REAL	REAL
MIN(x1, x2, ..., xn)	minimum of x1, x2, ... xn	INTEGER	INTEGER
		REAL	REAL
MOD(x,y)	remainder x - INT(x/y)*y	INTEGER	INTEGER
		REAL	REAL