

## TurboCalc Key Features

TurboCalc offers a collection of facilities that have been enhanced over several years to incorporate latest computing technology and valuable inputs from users.

### User sensitive features

- Automatic unit checking and conversion
- Continuous discrete prompts for tools and commands
- Double precision floating point accuracy
- Mouse controlled Pan and Zoom
- Multiple documentation interface (MDI) for simultaneous display of multiple worksheets
- Multiple level user definable (up to 1000 steps) Undo/Redo capability
- User definable units library
- Work with inch and metric units, as well as user defined unit system

### Sketching tools

**Constraint manager:** TurboCalc includes an ultra-fast constraint manager especially tailored for function modeling. The powerful point and click constraint manager can resolve virtually unlimited number of circularities. It tracks original design intents to automatically resolve plural solutions. Initial geometry can be entered within TurboCalc as well as imported from any DXF compliant CAD software using the built-in 2-way automatic translator.

**Geometry definition tools:** Line, Circle, Arc, Poly Line, Closed Boundary. Initial geometry can also be imported from any DXF compliant CAD software.

**Constraint tools:** Free point, Concentric, Centroid, Endpoint, Proportional, Tangent, Intersection, Virtual Intersection, On-Entity/Slider, Parallel, Perpendicular, and at a fixed angle with respect to another line.

**Automatic Constraint snapping facility:** TurboCalc includes an automatic constraint inference facility which, when turned on, allows you to snap automatically to center, endpoints, tangents, centroid, and on-geometry automatically. Lines snap automatically to horizontal and vertical.

**Text tool:** Allows entering notes and annotations. Use all available fonts in your computer.

**View manipulation tools:** Pan, Zoom, Zoom by 2X, Zoom by .5X, Zoom to fit, Show paper boundary.

### Automatic measurements

TurboCalc incorporates linear, radial, and angular dimensions that can be constrained to measure any aspect of the flexible model. The measurements are updated automatically as design intents are altered. The measurements can be directly included in calculations setup in TurboCalc Formula bar.

## Calculations facilities

**Formula Bar:** TurboCalc incorporates a “point and click” type Formula bar that is used to establish bi-directional association between geometry, dimension, empirical values, and calculations.

**Built-in calculation functions:** TurboCalc includes a library of 88 built-in functions to setup in the Formula bar and the Programmable calculator. Complete built-in function listing is available at the end of this page.

## Automatic backsolving (Goal Seek)

TurboCalc allows users to stipulated any measured or calculated value as design target and then have the computer Goal Seek the characteristics of any geometry that participates in the result until the actual value of the measurement or the calculated value is equal to the stipulated target value.

## Input Output

- Built-in 2-way DXF translator
- Print drawing directly from TurboCalc
- Cut, copy, and paste information from TurboCalc to Windows clipboard.
- Cut, copy, and paste information from Windows clipboard into TurboCalc
- Windows standard 2-way Dynamic data exchange (DDE)

## Built-in Functions Listing

### Mathematical Functions

Alphanumeric Word  
abs()  
ANGLE(point\_or\_complex)  
CEIL(number)  
FLOOR(number)  
DISTANCE(point\_a,point\_b)  
E()  
EXP(number)  
I()  
LN(number\_or\_complex)  
LOG(number\_or\_complex)  
MOD(number\_a,number\_b)  
NOUNITS(value)  
NROOT(number\_or\_complex,optional\_nth,optional\_ii)  
PI  
QUADRATIC(number\_a,number\_b,number\_c,optional\_number\_ii)  
RAND()Returns a random number between 0 and 1.  
RANDOM(number\_a,number\_b)  
ROUND(number\_a,number\_b)  
SQRT(number\_or\_complex)

## Geometry-associative Calculation Functions

Area  
Distance of neutral axis to extreme fiber  
Diameter  
Moments a of Inertia  
Polar Moment of Inertia  
Product of Inertia  
Radius of Gyration  
Perimeter  
Static Moment of Inertia  
Centroid  
Radius  
Section Modulus  
End or Endpoint  
Included Angle  
Length  
Angle  
Origin  
Start Vector  
Value  
Vector

## Statistical Functions

MAXIMUM(number\_1,number\_2,...)  
MINIMUM(number\_1,number\_2,...)

## Trigonometric Functions

ACOS(number)  
ACOSH(number)  
ASIN(number)  
ASINH(number)  
ATAN2(number\_y,number\_x)  
COS(number)  
COSH(number)  
SIN(number)  
SINH(number)  
TAN(number)  
TANH(number)

## Point and vector Functions

HORIZONTAL()  
Point  
UNITIZE(point)  
Vector Add  
VECANG(number)  
Vector Dot Product  
Vector Subtract  
Vector Return  
VERTICAL()  
point\_or\_complex.X  
point\_or\_complex.Y

## Control Functions

Choose  
False  
IF  
Is Complex  
Is Error  
Is Geometry  
Is Logical  
Is Not Available  
Is Number  
Is Point  
True

## Binary Operators

A plus B, A minus B  
A times B, A dot B, A divide B, A ratio B  
A exponent B  
A not equal B, A equal B etc.  
A or B, A and B  
Average

## Unary Operations

A  
~ A

## Postfix Operators

A%

## Textual Components

Comment  
DDE Reference  
Dot Field Operator  
{geometry Tag}  
Variable