

## GrafiCalc Elements Key Features

GrafiCalc Elements 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

### Input Output

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

### Sketching tools

**Constraint manager:** GrafiCalc Elements includes an ultra-fast constraint manager especially tailored for function modeling. Initial geometry can be entered within GrafiCalc Elements 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:** GrafiCalc Elements 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

GrafiCalc Elements 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 GrafiCalc Elements Formula bar.

## Calculations facilities

**Formula Bar:** GrafiCalc Elements 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:** GrafiCalc Elements includes a library of 88 built-in functions to setup in the Formula bar and the Programmable calculator.

## 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%