

# 3D Surface Plotter

An online tool to create 3D plots of surfaces.

- Maths
- Geometry
- Graph
- Plot
- Surface



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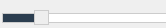
Expression

z =

x Range (min, max)

y Range (min, max)

Resolution



Calculate

This demo allows you to enter a mathematical expression in terms of  $x$  and  $y$ . When you hit the calculate button, the demo will calculate the value of the expression over the  $x$  and  $y$  ranges provided and then plot the result as a surface. The graph can be zoomed in by scrolling with your mouse, and rotated by dragging around. Clicking on the graph will reveal the  $x$ ,  $y$  and  $z$  values at that particular point.

The table below lists which functions can be entered in the expression box.

Expression	Description
$\sin(x)$	The sine of $x$ in radians
$\cos(x)$	The cosine of $x$ in radians
$\tan(x)$	The tangent of $x$ in radians
$\text{asin}(x)$ , $\text{acos}(x)$ , $\text{atan}(x)$	The inverse of the three trigonometric functions listed above
$\text{sqrt}(x)$	The square root of $x$ (for positive $x$ only)
$\log(x)$	The natural logarithm of $x$
$\text{pow}(x, y)$	The power of $x$ to the $y$

You can also apply certain constraints/inequalities to the graph. If, for example, you wanted to show the funtion  $x^2 - y^2$  but only in areas where  $x$  is greater than  $y$ , you would enter "if ( $x > y$ ,  $x*x - y*y$ )" in the expression box. You can also enter a third option which will be plotted if the first condition is not met - for example "if ( $x > y$ ,  $x*x - y*y$ ,  $x$ )" will plot  $x^2 - y^2$  in all areas where  $x$  is greater than  $y$ , and  $x$  in all areas where  $x$  is *not* greater than  $y$ .

The resolution slider can be used to increase the number of data points displayed on the graph, which gives a smoother final result, but since this needs more computational power, you may notice a slight decrease in frame rate when interacting with the graph.

Every time you hit the "Calculate" button, the URL updates with your current settings meaning you can share a link directly to a graph of your choice without having to keep typing in the settings.

Please note, if your surface includes complex numbers, only the real part will be plotted.

You might also be interested in

$$\sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2}$$

Standard Deviation Calculator



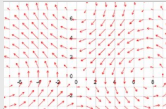
Capital Cities Map



Bortle Scale



Lissajous Curves



Vector Field Plotter





