

Syntax for Entering Functions in Interactivate Activities

- Numerical values entered should be accurately calculated from 10^{-8} to 10^8 . Numbers larger or smaller than these values produce unreliable results. You may use scientific notation for entering functions in the form: mantissa followed by an e followed by 10 raised to the desired power. For example 0.000032 would be input as $3.2e10^{-5}$.

Functions and their compositions can be typed as follows:

Type the formula of the function you want to graph in the text box labeled **f(x)=**.

Function	Symbol	Examples (including combinations of functions)
addition	+	x + 3 x plus three
subtraction	-	5 - x five minus x
multiplication	*	(x - 2)*x x times x minus two
division	/	3/x three divided by x
power	^	x^3 - 1 x to the power of three minus one
power	**	x**3 - 1 x to the power of three minus one
π (pi)	pi	sin(pi*x) sin of π (pi) times x
square root	sqrt(...)	sqrt(x-1) square root of x minus one
nth root (see * below)	$x^{(1/n)}$	x^(1/3) cube root of x
absolute value	abs(...)	abs(3 - x) absolute value of three minus x
positive part of the operand	ppo(...)	ppo(x+2) returns x+2 if $x > 0$ and 0 if $x < 0$
step	step(...)	step(x) returns 1 if $x > 0$ and 0 if $x < 0$
e to the power of x	exp(...)	exp(x) e to the power of x
sine	sin(...)	sin(x**2) sine of x squared
cosine	cos(...)	cos(5 - x) cosine of five minus x
tangent	tan(...)	tan(x) tangent x
arcsine	asin(...)	2*asin(x) two times arcsine x

arccosine	$\text{acos}(\dots)$	$\text{acos}(x)$ arccosine x
arctangent	$\text{atan}(\dots)$	$\text{atan}(x)$ arctangent of x
hyperbolic sine	$\text{sinh}(\dots)$	$\text{sinh}(1 - x)$ hyperbolic sine of one minus x
hyperbolic cosine	$\text{cosh}(\dots)$	$\text{cosh}(10/x)$ hyperbolic cosine of ten divided by x
hyperbolic tangent	$\text{tanh}(\dots)$	$\text{tanh}(x)$ hyperbolic tangent of x
natural logarithm	$\ln(\dots)$	$\ln(x)$ natural logarithm of x
base 10 logarithm	$\log(\dots)$	$\log(x + 5)$ base ten logarithm of x plus five

* When x is less than zero, the exponent must be written as a whole number or in fraction form, not a decimal. For instance, if you want to graph the fifth root of negative numbers, you must write $x^{(1/5)}$, **not** $x^{(0.2)}$.