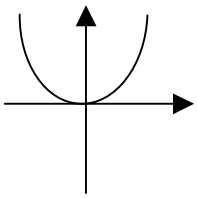
curves

A function is like a wedding. There are tables, chairs, food, wine etc.

A function of x tells the story of the output for any value of x. $f(x) = x^2 + 2x - 8$ is a function of x.

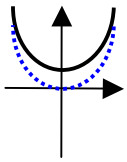
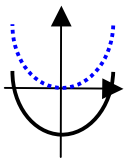
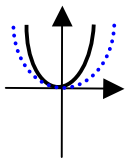
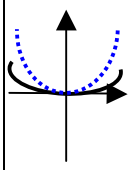
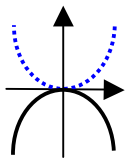
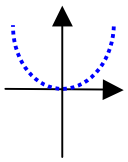
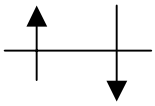
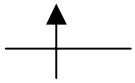
Put x = 3 and we get $f(3) = 3^2 + 2x3 - 8 = 7$. (3, 7) is a point on the graph of $y = x^2 + 2x - 8$.

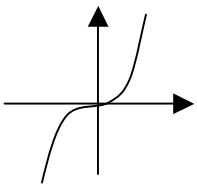
These functions can be **transformed** by changing the form of the original function.



This is the basic curve $y = x^2$. It is called a parabola and it can "hold water".

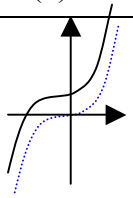
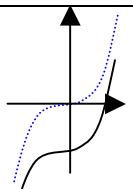
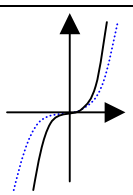
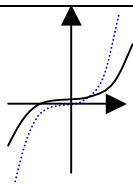
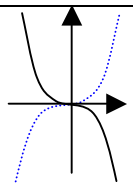
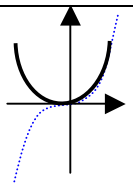
We write $f(x) = x^2$ This is the simplest quadratic and it can be transformed:

EXTERNAL TAMPERING	f(x) + 1	f(x) - 2	2f(x)	$\frac{1}{2}$ f(x)	-f(x)	| f(x) |
EFFECT	THE + 1 TAKES THE GRAPH 1 UNIT UP.	THE - 2 TAKES THE GRAPH DOWN 2 UNITS.	MULTIPLYING BY 2 TAKES EVERY Y VALUE TWICE AS FAR FROM THE X-AXIS.	THIS EFFECT SHRINKS EVERY VALUE NEARER TO THE X-AXIS BY A FACTOR OF $\frac{1}{2}$	THIS EFFECT REVERSES THE SIGN OF THE Y VALUES. NOW $Y = -x^2$ Reflection in the x-axis	THIS IS MOD F(X) AND TURNS NEGATIVE Y VALUES POSITIVE. Already positive here so no change
The original curve is dotted						
CODE 	 1	 -2	 X2	X $\frac{1}{2}$		

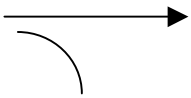


This is the basic curve $y = x^3$.

These are the effects of the same transformations:

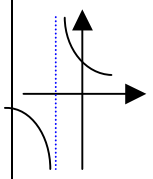
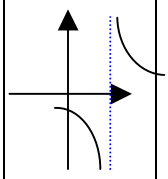
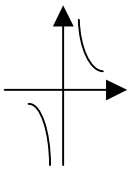
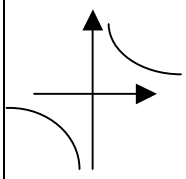
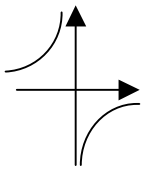
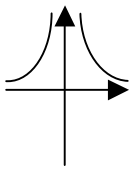
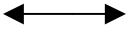
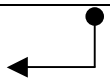
EXTERNAL TAMPERING	f(x) + 1	f(x) - 2	2f(x)	$\frac{1}{2}$ f(x)	-f(x)	| f(x) |
						

This is the basic curve $y = \frac{1}{x}$

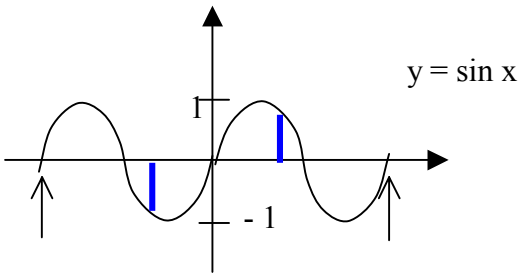


The axes are **asymptotes** to the curve. The curve touches the axes at infinity.

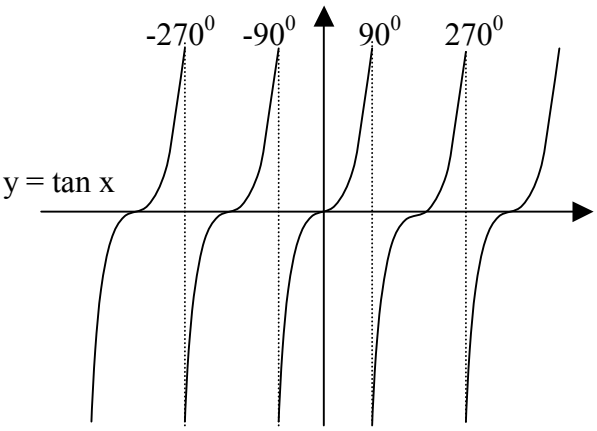
We will **transform** this curve with some internal tampering.

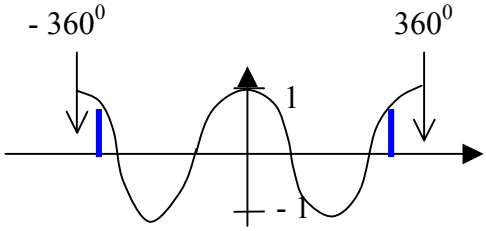
(EXTERNAL)	f(x) + 1	f(x) - 2	2f(x)	$\frac{1}{2}$ f(x)	-f(x)	| f(x) |
INTERNAL TAMPERING	f(x + 1)	f(x - 2)	f(2x)	f($\frac{1}{2}$x)	f(-x)	f(|x|)
All transformations happen in a horizontal direction and are **opposite** to Expectation.						
CODE	 Back 1	 Forward 2	 Shrink 2	 Expand 2	 Reflect in y - axis	 Who knows?

Just a few other curves which you may be asked to transform:



The sine function is an odd function
sin(-x) = - sin(x)





The cosine function is an even function: cos(-x) = cos(x)

Some transformed curves: