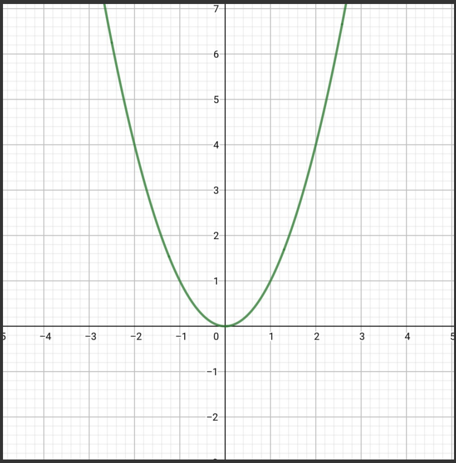
$+$ $\times$

$-$ $\div$

EVEN AND ODD

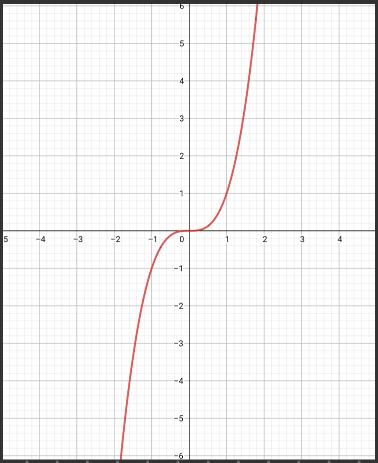
$f(-x) = f(x)$

$y = x^2$



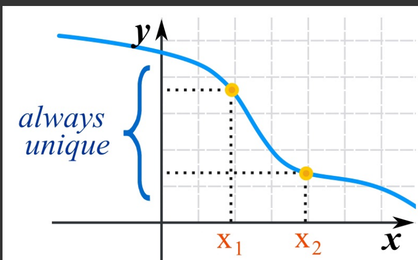
$f(-x) = -f(x)$

$y = x^3$



INJECTIVE, SUBJECTIVE AND BIJECTIVE

ONE TO ONE



STRICTLY INCREASING AND STRICTLY DECREASING FUNCTIONS

A function ***f*** is **injective** if and only if whenever ***f(x) = f(y)***, ***x = y***.

A function ***f*** (from set ***A*** to ***B***) is **surjective** if and only if for every ***y*** in ***B***, there is at least one ***x*** in ***A*** such that ***f*(*x*) = *y***, in other words ***f*** is surjective if and only if ***f(A) = B***.

INJECTIVE AND SUBSECTIVE AT THE SAME TIME

A function ***f*** (from set ***A*** to ***B***) is **bijective** if, for every ***y*** in ***B***, there is exactly one ***x*** in ***A*** such that ***f*(*x*) = *y***
Alternatively, ***f*** is bijective if it is a **one-to-one correspondence** between those sets, in other words both **injective and surjective**

LOGARITMI

È L'ESPONENTE DA DARE ALLA BASE PER OTTENERE L'ARGOMENTO

$\log_b a = x \qquad a = b^x$

$b > 0 \quad b \neq 1$

$a > 0$

$\log x = \log_e x = \ln x$

$\log_b a + \log_b c = \log_b (a \cdot c)$

$\log_b a + \log_b c = \log_b \left(\frac{a}{c}\right)$

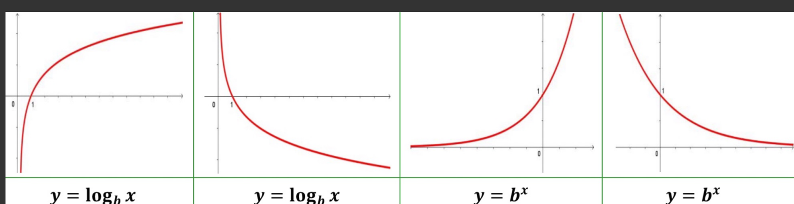
$c \log_b a = \log_b a^c$

$\log_{b^n} a^m = \log_b a^{m/n} = \frac{m}{n} \log_b a$

$\log_{\frac{1}{b}} a = -\log_b a$

$\log_b \frac{1}{a} = -\log_b a$

$\log_{\frac{1}{b}} \frac{1}{a} = \log_b a$



$y = \log_b x$ logaritmo con $b > 1$ | $y = \log_b x$ logaritmo con $0 < b < 1$ | $y = b^x$ esponenziale con $b > 1$ | $y = b^x$ esponenziale con $0 < b < 1$

$\log_b a = \frac{1}{\log_a b}$

$\log_b a = \frac{\log_c a}{\log_c b}$ ← CHANGE BASE

POTENZE

$a^0 = 1 \quad a \neq 0$

$0^n = 0 \quad n \neq 0$

$0^0 =$ UNDEFINE

$a^m \cdot a^n = a^{m+n}$

$a^m / a^n = a^{m-n}$

$(a^m)^n = a^{m \cdot n}$

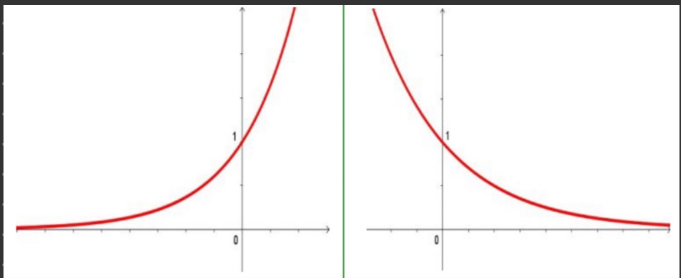
$a^m \cdot b^m = (a \cdot b)^m$

$a^n / b^n = \left(\frac{a}{b}\right)^n$

$a^{-n} = \frac{1}{a^n}$

$\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$

$a^{m/n} = \sqrt[n]{a^m}$

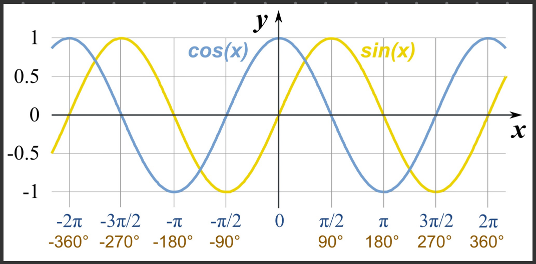


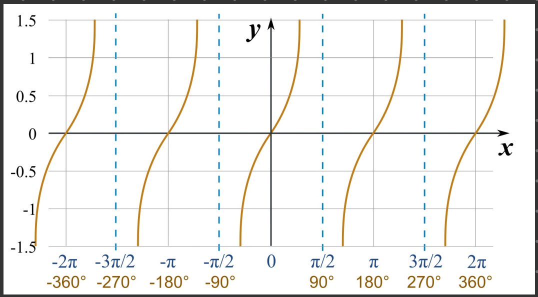
$y = b^x$
esponenziale con b > 1

$y = b^x$
esponenziale con 0 < b < 1

TRIGONOMETRIA

α(gradi)	α (rad)	sinα	cosα	tanα	cotα
0°	0	0	1	0	∞
30°	$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$	$\sqrt{3}$
45°	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1	1
60°	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{\sqrt{3}}{3}$
90°	$\frac{\pi}{2}$	1	0	∞	0





$$(\sin x)^2 + (\cos x)^2 = 1$$

$$(\sin x)^2 = \frac{(\tan x)^2}{1 + (\tan x)^2}$$

$$(\cos x)^2 = \frac{1}{1 + (\tan x)^2}$$

$$\sin\left(\frac{\pi}{2} - x\right) = \sin\left(\frac{\pi}{2} + x\right) = \cos x$$

$$\cos\left(\frac{\pi}{2} - x\right) = -\cos\left(\frac{\pi}{2} + x\right) = \sin x$$

$$\sin(\pi - x) = -\sin(\pi + x) = \sin x$$

$$\cos(\pi - x) = \cos(\pi + x) = -\cos x$$

$$\sin(2x) = 2 \sin x \cos x$$

$$\cos(2x) = (\cos x)^2 - (\sin x)^2$$