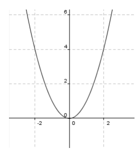
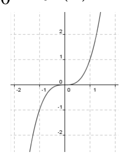
SERIE DI FOURIER

FORMA TRIGONOMETRICA	FORMA ARMONICA	FORMA COMPLESSA
$f(x) \simeq a_0 + \sum_{k=1}^{\infty} a_k \cos(k\omega x) + b_k \sin(k\omega x)$ $a_0 = \frac{1}{T}\int_0^T f(x)\,dx$ $a_k = \frac{2}{T}\int_0^T f(x)\cos(k\omega x)\,dx$ $b_k = \frac{2}{T}\int_0^T f(x)\sin(k\omega x)\,dx$	$f(x) \simeq a_0 + \sum_{k=1}^{\infty} A_k \cos(k\omega x + \phi_k)$ $A_k = \sqrt{a_k^2 + b_k^2} \phi_k = -arctg(\frac{b_k}{a_k})$	$f(x) \simeq \sum_{-\infty}^{\infty} C_k e^{i\omega kx}$ $C_k = (a_k \pm b_k)$

SIMMETRIA PARI	SIMMETRIA DISPARI
$f(x) = f(-x)$ $a_0 = \frac{2}{T}\int_0^{T/2} f(x)\,dx$ $a_k = \frac{4}{T}\int_0^{T/2} f(x)\cos(k\omega x)\,dx$ $b_k = 0$ 	$f(-x) = -f(x)$ $a_0 = 0$ $a_k = 0$ $b_k = \frac{4}{T}\int_0^{T/2} f(x)\sin(k\omega x)\,dx$ 

INTEGRALI NOTEVOLI

$\int_0^T \sin^2(n\omega x)dx = \frac{T}{2}$

$\int \sin(k\omega x)dx = -\frac{\cos(k\omega x)}{k\omega}$

$\int x\sin(k\omega x)dx = \frac{\sin(k\omega x)}{k^2\omega^2} - \frac{x\cos(k\omega x)}{k\omega}$

$\int x^2\sin(k\omega x)dx = \frac{(2-k^2\omega^2x^2)\cos(k\omega x)}{(k^3\omega^3)} + \frac{2x\sin(k\omega x)}{(k^2\omega^2)}$

$\int x^3\sin(k\omega x)dx = \frac{x(6-k^2w^2x^2)\cos(kwx)}{(k^3w^3)} + \frac{3(k^2w^2x^2-2)\sin(kwx)}{(k^4w^4)}$

$\int_0^T \cos^2(n\omega x)dx = \frac{T}{2}$

$\int \cos(k\omega x)dx = \frac{\sin(k\omega x)}{k\omega}$

$\int x\cos(k\omega x)dx = \frac{\cos(k\omega x)}{k^2\omega^2} + \frac{x\sin(k\omega x)}{k\omega}$

$\int x^2\cos(k\omega x)dx = \frac{2x\cos(k\omega x)}{(k^2\omega^2)} + \frac{x^2\sin(k\omega x)}{(k\omega)} - \frac{2\sin(k\omega x)}{(k^3\omega^3)}$

$\int x^2\cos(k\omega x)dx = \frac{3(k^2w^2x^2-2)\cos(kwx)}{(k^4w^4)} + (\frac{x^3}{(kw)} - \frac{6x}{(k^3w^3)})\sin(kwx)$

FUNZIONE	VALORE
$\cos(2k\pi)$	1
$\sin(2k\pi)$	0
$\cos(k\pi)$	$(-1)^k$
$\sin(k\pi)$	0
$\cos(\frac{k\pi}{2})$	$\begin{cases} (-1)^{k/2} & k = pari \\ 0 & k = dispari \end{cases}$
$\sin(\frac{k\pi}{2})$	$\begin{cases} 0 & k = pari \\ (-1)^{(k-1)/2} & k = dispari \end{cases}$