Τριγωνομετρία

Βασικές ιδιότητες: $\cos(-x) = \cos x$, $\sin(-x) = -\sin x$,
$\cos^2 x + \sin^2 x = 1, \quad 1 + \operatorname{tg}^2 x = 1/\cos^2 x$,
$n \in \mathbb{N} \Rightarrow \cos(n\pi) = (-1)^n, \quad \sin((2n-1)\pi/2) = (-1)^{n-1}$

Βασικές τιμές:

x	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$
$\sin x$	0	$1/2$	$\sqrt{2}/2$	$\sqrt{3}/2$	1
$\cos x$	1	$\sqrt{3}/2$	$\sqrt{2}/2$	$1/2$	0

Βασικές ταυτότητες:

$\cos(x+y) = \cos x \cos y - \sin x \sin y$

$\sin(x+y) = \sin x \cos y + \cos x \sin y$

$\cos 2x = \cos^2 x - \sin^2 x = 1 - 2\sin^2 x = 2\cos^2 x - 1 = \frac{1-\operatorname{tg}^2 x}{1+\operatorname{tg}^2 x}$

$\sin 2x = 2\cos x \sin x = \frac{2\operatorname{tg} x}{1+\operatorname{tg}^2 x}$

$2\cos x \cos y = \cos(x-y) + \cos(x+y)$

$2\sin x \sin y = \cos(x-y) - \cos(x+y)$

$2\sin x \cos y = \sin(x+y) + \sin(x-y)$

$\sin x + \sin y = 2\sin\frac{x+y}{2}\cos\frac{x-y}{2}, \quad \sin x - \sin y = 2\cos\frac{x+y}{2}\sin\frac{x-y}{2}$

$\cos x + \cos y = 2\cos\frac{x+y}{2}\cos\frac{x-y}{2}, \quad \cos y - \cos x = 2\sin\frac{x+y}{2}\sin\frac{x-y}{2}$

Βασικές δυναμοσειρές - σειρές Maclaurin

- $\displaystyle \frac{1}{1-x} = \sum_{n=0}^{\infty} x^n, \; x \in (-1,1).$
- $\displaystyle e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!}, \; x \in \mathbb{R}.$
- $\displaystyle (1+x)^r = \sum_{n=0}^{\infty} \binom{r}{n} x^n = \sum_{n=0}^{\infty} \frac{r(r-1)\cdots(r-n+1)}{n!} x^n, \; x \in (-1,1), \; r \in \mathbb{R}.$
- $\displaystyle \ln(1+x) = \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n} x^n, \; x \in (-1,1].$
- $\displaystyle \sin x = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} x^{2n+1}, \quad \cos x = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n)!} x^{2n}, \; x \in \mathbb{R}.$
- $\displaystyle \sinh x = \sum_{n=0}^{\infty} \frac{1}{(2n+1)!} x^{2n+1}, \quad \cosh x = \sum_{n=0}^{\infty} \frac{1}{(2n)!} x^{2n}, \; x \in \mathbb{R}.$