Použití určitého integrálu

$$P=\int_a^b f(x)\,\mathrm{d}x \ \ [f(x)\geq 0 \text{ na } \langle a,b\rangle] \qquad P=\int_a^b (f(x)-g(x))\,\mathrm{d}x \ \ [f(x)\geq g(x) \text{ na } \langle a,b\rangle]$$

$$V=\pi\cdot\int_a^b f^2(x)\,\mathrm{d}x \qquad l=\int_a^b \sqrt{1+(f'(x))^2}\,\mathrm{d}x \qquad S=2\pi\cdot\int_a^b f(x)\cdot\sqrt{1+(f'(x))^2}\,\mathrm{d}x$$

Taylorův rozvoj funkce $f(x)$ v bodě $x=a$

$$T_n(x)=f(a)+\tfrac{f'(a)}{1!}(x-a)+\tfrac{f''(a)}{2!}(x-a)^2+\cdots+\tfrac{f^{(n)}(a)}{n!}(x-a)^n,$$

$$f(x)=T_n(x)+R_n(x), \qquad R_n(x)=\tfrac{f^{(n+1)}(c)}{(n+1)!}(x-a)^{(n+1)}, \qquad c\in\langle a,x\rangle$$

Funkce gama a beta

$$\Gamma(x)=\int_0^\infty t^{x-1}\cdot \mathrm{e}^{-t}\,\mathrm{d}t, \quad \Gamma(x+1)=x\cdot\Gamma(x), \quad \Gamma(n+1)=n!, \quad \Gamma(\tfrac{1}{2})=\sqrt{\pi},$$

$$\mathrm{B}\,(x,y)=\int_0^1 t^{x-1}\cdot(1-t)^{y-1}\,\mathrm{d}t, \quad \mathrm{B}\,(x,y)=\mathrm{B}\,(y,x), \quad \mathrm{B}\,(x,y)=\frac{\Gamma(x)\cdot\Gamma(y)}{\Gamma(x+y)}.$$

Goniometrické funkce

$$\sin\,(x\pm 2k\pi)=\sin x,\ \cos\,(x\pm 2k\pi)=\cos x,\ \mathrm{tg}\,(x\pm k\pi)=\mathrm{tg}\,x,\ \mathrm{cotg}\,(x\pm k\pi)=\mathrm{cotg}\,x,$$

$$\sin\,(-x)=-\sin x, \quad \cos\,(-x)=\cos x, \quad \mathrm{tg}\,(-x)=-\mathrm{tg}\,x, \quad \mathrm{cotg}\,(-x)=-\mathrm{cotg}\,x,$$

$$\mathrm{tg}\,x=\frac{\sin x}{\cos x}, \quad \mathrm{cotg}\,x=\frac{\cos x}{\sin x}, \quad \mathrm{tg}\,x\cdot\mathrm{cotg}\,x=1, \quad \sin^2 x+\cos^2 x=1.$$

x	$-\frac{\pi}{2}$	$-\frac{\pi}{3}$	$-\frac{\pi}{4}$	$-\frac{\pi}{6}$	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π
$\sin x$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\cos x$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	-1
$\mathrm{tg}\,x$	*	$-\sqrt{3}$	-1	$-\frac{\sqrt{3}}{3}$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	*	$-\sqrt{3}$	-1	$-\frac{\sqrt{3}}{3}$	0
$\mathrm{cotg}\,x$	0	$-\frac{\sqrt{3}}{3}$	-1	$-\sqrt{3}$	*	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0	$-\frac{\sqrt{3}}{3}$	-1	$-\sqrt{3}$	*

$$\sin\,(\alpha\pm\beta)=\sin\alpha\cdot\cos\beta\pm\cos\alpha\cdot\sin\beta, \qquad \cos\,(\alpha\pm\beta)=\cos\alpha\cdot\cos\beta\mp\sin\alpha\cdot\sin\beta,$$

$$\mathrm{tg}\,(\alpha\pm\beta)=\frac{\mathrm{tg}\,\alpha\pm\mathrm{tg}\,\beta}{1\mp\mathrm{tg}\,\alpha\cdot\mathrm{tg}\,\beta}, \qquad \mathrm{cotg}\,(\alpha\pm\beta)=\frac{\mathrm{cotg}\,\alpha\cdot\mathrm{cotg}\,\beta\mp 1}{\mathrm{cotg}\,\beta\pm\mathrm{cotg}\,\alpha},$$

$$\sin 2\alpha=2\cdot\sin\alpha\cdot\cos\alpha, \qquad \cos 2\alpha=\cos^2\alpha-\sin^2\alpha, \qquad \mathrm{tg}\,2\alpha=\frac{2\cdot\mathrm{tg}\,\alpha}{1-\mathrm{tg}^2\alpha},$$

$$\mathrm{cotg}\,2\alpha=\frac{\mathrm{cotg}^2\alpha-1}{2\cdot\mathrm{cotg}\,\alpha}, \qquad \sin^2\alpha=\frac{1-\cos 2\alpha}{2}, \qquad \cos^2\alpha=\frac{1+\cos 2\alpha}{2}.$$

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