

Integrál a aritmetické operace

$$\int (f(x) \pm g(x)) dx = \int f(x) dx \pm \int g(x) dx$$

$$\int cf(x) dx = c \int f(x) dx$$

Integrály elementárních funkcí

$$\int k dx = kx + C$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int \frac{1}{x} dx = \ln |x| + C$$

$$\int e^x dx = e^x + C$$

$$\int a^x dx = \frac{a^x}{\ln a} + C$$

$$\int \sin x dx = -\cos x + C$$

$$\int \cos x dx = \sin x + C$$

$$\int \frac{1}{\cos^2 x} dx = \operatorname{tg} x + C$$

$$\int \frac{1}{\sin^2 x} dx = -\operatorname{cotg} x + C$$

$$\int \frac{1}{\sqrt{1-x^2}} dx = \arcsin x + C$$

$$\int \frac{1}{1+x^2} dx = \operatorname{arctg} x + C$$

Obsah plochy

$$S = \int_a^b f(x) dx$$

$$S = \int_{\alpha}^{\beta} \psi(t) \cdot \varphi'(t) dt$$

$$S = \int_{\alpha}^{\beta} \frac{1}{2} r^2(\varphi) d\varphi$$

Délka křivky

$$l = \int_a^b \sqrt{1 + [f'(x)]^2} dx$$

$$l = \int_{\alpha}^{\beta} \sqrt{[\varphi'(t)]^2 + [\psi'(t)]^2} dt$$

$$l = \int_{\alpha}^{\beta} \sqrt{[r(\varphi)]^2 + [r'(\varphi)]^2} d\varphi$$

Objem rotačního tělesa

$$V = \pi \int_a^b f^2(x) dx$$

$$V = \pi \int_{\alpha}^{\beta} [\psi(t)]^2 \cdot |\varphi'(t)| dt$$

$$V = \pi \int_{\alpha}^{\beta} r^2(\varphi) \sin^2 \varphi \cdot |r'(\varphi) \cos \varphi - r(\varphi) \sin \varphi| d\varphi$$