Sivu 13.1. klo 12:58

INTEGROIMINEN

Integroimissääntöjä

$$\int x^r \, dx = \frac{1}{1+r} x^{r+1} + C, r \neq -1$$

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

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

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

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

$$\int s'(x) \, u(s(x)) \, dx = U(s(x)) + C$$

Esimerkkejä

1)

$$\int \sin 3x \, dx = \frac{1}{3} \int 3 \sin x \, dx = -\frac{1}{3} \cos 3x + C$$

2) $$\int \frac{x}{x^2+1} dx = \frac{1}{2} \int 2x \left(x^2+1\right)^{-1} dx$$

$$= \frac{1}{2} \ln\left(x^2+1\right) + C$$

3)

$$\int x^2 \sqrt{x^3-5} dx = \frac{1}{3} \int 3x^2 \left(x^3-5\right)^{\frac{1}{2}} dx$$

$$= \frac{1}{3} \cdot \frac{1}{1+\frac{1}{2}} \left(x^3-5\right)^{\frac{3}{2}} + C = \frac{2}{9} \left(x^3-5\right) \sqrt{x^3-5} + C$$

4) $$\int x e^{x^2} dx = \frac{1}{2} \int 2x e^{x^2} dx$$

$$= \frac{1}{2} e^{x^2} + C$$