Zestaw zadań 13

Zadanie 13.1

Obliczyć całki oznaczone:

$$\int_0^{\pi} \sin x \ \mathrm{d}x \qquad (1a)$$

$$\int_0^{1} (1-x^2) \ \mathrm{d}x \qquad (1b)$$

$$\int_1^{2} \frac{\mathrm{d}x}{x} \qquad (1c)$$

$$\int_0^{4} \sqrt{9x} \ \mathrm{d}x \qquad (1d)$$

$$\int_{-1}^{1} \sqrt{1-x^2} \ \mathrm{d}x \qquad (1e)$$

$$\int_0^{1} \frac{x^2+1}{x+1} \ \mathrm{d}x \qquad (1f)$$

$$\int_{-1}^{1} \frac{1}{x^2} \ \mathrm{d}x \qquad (1g)$$

$$\int_{-1}^{0} 12x^3 - 12x^2 - 24x - 5 \ \mathrm{d}x \qquad (1h)$$

$$\int_{-\pi/2}^{\pi/2} \operatorname{ctg} x \ \mathrm{d}x \qquad (1i)$$

$$\int_{\pi/4}^{\pi/2} \operatorname{ctg}^2 x \ \mathrm{d}x \qquad (1j)$$

Zadanie 13.2

Oblicz całki *niewłaściwe*:

$$\int_{-\infty}^{\infty} \frac{dx}{1+x^2} \qquad (2a)$$

$$\int_{-1}^{1} \frac{dx}{\sqrt{|x|}} \qquad (2b)$$

$$\int_{-\pi/2}^{\pi/2} \frac{dx}{\sin^2 x} \qquad (2c)$$

$$\int_{-1}^{1} \frac{dx}{x} \qquad (2d)$$

$$\int_0^{\infty} E \exp\left(-E/kT\right), \quad kT > 0 \qquad (2e)$$

$$\int_0^{e} \ln x \, dx \qquad (2f)$$