

7.2

Calcolare i seguenti integrali

(1)

$$\int_{-\infty}^{+\infty} \frac{dx}{(1+x^2)^3}$$

[Risposta: $3\pi/8$]

(2)

$$\int_{-\infty}^{+\infty} \frac{x^4 dx}{(a+bx^2)^4}, \quad a, b > 0$$

[Risposta: $\pi/(16a^{3/2}b^{5/2})$]

(3)

$$\int_{-\infty}^{+\infty} \frac{e^{ax} dx}{1+e^x}, \quad 0 < a < 1$$

[Risposta: $\pi/[\sin(a\pi)]$]

(4)

$$\int_0^{\infty} \frac{\sin x}{x} dx$$

[Risposta: $\pi/2$]

(5)

$$\int_0^{2\pi} \frac{d\theta}{3-2\cos\theta+\sin\theta}$$

[Risposta: π]

(6)

$$\int_{-\infty}^{+\infty} \frac{e^{-ikx} dx}{1+x^2}, \quad -\infty < k < +\infty$$

[Risposta: $\pi e^{-|k|}$]