

Esercizi sugli integrali impropri
Lista n.1 di giovedì 14 marzo 2002

Calcolare i seguenti integrali impropri (attenzione al n.10):

$$\boxed{1} \int_0^1 \frac{1}{\sqrt{x}} dx$$

$$\boxed{2} \int_0^{+\infty} e^{-x} dx$$

$$\boxed{3} \int_{-\infty}^0 e^x dx$$

$$\boxed{4} \int_1^{+\infty} \frac{1}{x^2} dx$$

$$\boxed{5} \int_{\frac{1}{e}}^1 \frac{1}{x\sqrt{|\log x|}} dx$$

$$\boxed{6} \int_e^{+\infty} \frac{1}{x \log^3 x} dx$$

$$\boxed{7} \int_0^{+\infty} x e^{-x} dx$$

$$\boxed{8} \int_{-\infty}^{+\infty} \frac{1}{1+x^2} dx$$

$$\boxed{9} \int_{-\infty}^{+\infty} \frac{x}{1+x^4} dx$$

$$\boxed{10} \int_{-\infty}^{+\infty} \frac{x}{1+x^2} dx$$

$$\boxed{11} \int_{-\infty}^{+\infty} x e^{-x^2} dx$$

$$\boxed{12} \int_0^1 \frac{1}{\sqrt{x-x^2}} dx$$

Studiare la convergenza dei seguenti integrali impropri:

$$\boxed{13} \int_0^1 \frac{2}{x^2} dx$$

$$\boxed{14} \int_1^{+\infty} \frac{2}{x^2} dx$$

$$\boxed{15} \int_0^1 \frac{-5}{x} dx$$

$$\boxed{16} \int_4^{+\infty} \frac{-5}{x} dx$$

$$\boxed{17} \int_0^3 \frac{9}{\sqrt{x}} dx$$

$$\boxed{18} \int_{-\infty}^{-100} \frac{9}{\sqrt{x}} dx$$

$$\boxed{19} \int_0^{+\infty} \frac{-3}{x^3+1} dx$$

$$\boxed{20} \int_{-2}^{-1} \frac{-3}{x^3+1} dx$$

$$\boxed{21} \int_{-\infty}^{-5} \frac{\sqrt[3]{e^{x+1}-1}}{x+1} dx$$

$$\boxed{22} \int_{-1}^0 \frac{\sqrt[3]{e^{x+1}-1}}{x+1} dx$$

$$\boxed{23} \int_{-\infty}^{+\infty} \frac{4 + \frac{1}{1+x^2}}{x^2+5} dx$$

$$\boxed{24} \int_1^{+\infty} \frac{\sin x - 3}{x + \sin x} dx$$

$$\boxed{25} \int_0^1 \frac{\sin x - 3}{x + \sin x} dx$$

$$\boxed{26} \int_0^4 \frac{1 + \sin^2 x}{x + \sqrt{x}} dx$$

$$\boxed{27} \int_8^{+\infty} \frac{1 + \sin^2 x}{x + \sqrt{x}} dx$$

$$\boxed{28} \int_0^{+\infty} \frac{1}{x^2 + \sqrt{x}} dx$$

$$\boxed{29} \int_0^{\frac{1}{2}} \frac{1}{\sqrt{x} \log^2 x} dx$$

$$\boxed{30} \int_{\frac{1}{2}}^1 \frac{1}{\sqrt{x} \log^2 x} dx$$

$$\boxed{31} \int_2^{+\infty} \frac{1}{\sqrt{x} \log^2 x} dx$$

$$\boxed{32} \int_0^{\frac{1}{2}} \frac{1}{x^2 \sqrt{|\log x|}} dx$$

$$\boxed{33} \int_1^2 \frac{1}{x^2 \sqrt{\log x}} dx$$

$$\boxed{34} \int_2^{+\infty} \frac{1}{x^2 \sqrt{\log x}} dx$$

$$\boxed{35} \int_0^{\frac{1}{2}} \frac{1}{x \log^3 x} dx$$

$$\boxed{36} \int_2^{+\infty} \frac{1}{x \log^3 x} dx$$