- Integrali definiti ed indefiniti

- Funzioni a due variabili

1   Integrali definiti ed indefiniti

$$\int_1^e (\sqrt{x} - 1) \log x \, dx \tag{1}$$

$$\int \frac{2 \sin x}{\cos x + \sin x} dx \tag{2}$$

1.1   Altri esercizi proposti

$$\int \log \left(\frac{x - x^2}{x^3} \right) dx \tag{3}$$

$$\int_1^2 \frac{1 + x^2 e^{x^2}}{x} dx \tag{4}$$

$$\int_2^{e+1} ((3x^2 - 1) \log (x - 1)) dx \tag{5}$$

$$\int (x \sin x) dx \tag{6}$$

$$\int_e^{e^2} \frac{\log x}{\sqrt{x}} dx \tag{7}$$

$$\int \frac{\sin(\log x)}{x} dx \tag{8}$$

$$\int_0^1 x \sqrt{1 + x^2} dx \tag{9}$$

$$\int_0^2 \frac{x^3}{1 + x^2} dx \tag{10}$$

$$\int_1^3 \frac{1}{\sqrt{x} + 3} dx \tag{11}$$

$$\int_0^{\frac{\pi}{2}} (\sin x - x \cos x) dx \tag{12}$$

$$\int_0^1 (3e^{-x} + xe^{-x^2} + 2e^{3x}) dx \tag{13}$$

$$\int_0^{\frac{1}{2}} \frac{1}{x(\log x)^2} dx \tag{14}$$

$$\int_0^1 \frac{1}{x^2 + 2x + 1} dx \tag{15}$$

2 Funzioni a due variabili

Individuare il dominio e i punti stazionari

$$f(x,y) = x^3 + 8y^3 - 3xy \tag{16}$$

$$f(x,y) = e^y e^x - x - y \tag{17}$$

$$f(x,y) = \log(x^2 + 2(y-4)^2) \tag{18}$$

$$f(x,y) = exp(\sqrt{1 - x^2 - y^2}) \tag{19}$$

2.1 Problemi di ottimo con vincolo

$$f(x,y) = (x-y)e^{-(x+y)^2} \\ 2x - y = 0 \tag{20}$$

$$f(x,y) = xy + 2x - 3 \\ y = x \tag{21}$$

$$f(x,y) = \log x + \frac{y}{2}\sqrt{x} \\ y = x^2 - 1 \tag{22}$$

$$f(x,y) = x + \log y \\ 2x - y = 3 \tag{23}$$

2.2 Altri esercizi proposti

$$f(x,y) = x^2 + y^2 - 3x + 2y \tag{24}$$

$$f(x,y) = \frac{4}{3}x^3 - xy^2 - y \tag{25}$$

$$f(x,y) = y^4 x^3 - xy + 1 \tag{26}$$

$$f(x,y) = \log\left(\frac{1 - x^2 + y^2}{1 - x^2 - y^2}\right). \tag{27}$$

$$f(x,y) = \log\sqrt{xy} \tag{28}$$

$$f(x,y) = \frac{xy}{2 - (xy)^2} \tag{29}$$