

# Analisi Matematica 1 - Lista n. 24

## Calcolo di Integrali Definiti

Titolo nota

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Calcolare i seguenti integrali:

- 1)  $\int_0^{\frac{1}{4}} e^{4x} (16x+60) dx = 15e^{-14}$     2)  $\int_{\frac{2}{7}}^1 \sqrt{21x-5} dx = 2$
- 3)  $\int_{-6}^{-\frac{11}{2}} 16(3x+17)^5 dx = -\frac{7}{8}$     4)  $\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \frac{\cos x}{(\sin x)^7} dx = \frac{7}{6}$
- 5)  $\int_{\frac{1}{e}}^e \frac{4}{x\sqrt{17+\ln(x^8)}} dx = 2$     6)  $\int_0^1 (2x^7 - x^3) \arctan(x^2) dx = \frac{5}{12} - \frac{\pi}{8}$
- 7)  $\int_0^1 x^2 \cdot (5 + 6 \ln(1+x)) dx = 4 \ln 2$     8)  $\int_0^1 \frac{e^{\sqrt[5]{x}}}{15} dx = 3e^{-8}$
- 9)  $\int_0^{\frac{3}{2}} \frac{12x^2+1}{4\sqrt[4]{1+x+4x^3}} dx = \frac{7}{3}$     10)  $\int_{-1}^1 \frac{(3\pi + 4 \arctan x)^3}{\pi^4 (1+x^2)} dx = 15$
- 11)  $\int_e^{e^2} \frac{6(\ln x)^3 - 15 \ln x + \log_2 e}{x \ln x} dx = 0$     12)  $\int_1^{27} \frac{3x + \ln(x^{10})}{90\sqrt[3]{x^2}} dx = 3 \ln 3$
- 13)  $\int_{-\pi}^{\pi} (2x^7 + \frac{x^2}{2} - 5x) \cos x dx = -2\pi$     14)  $\int_6^{11} \frac{20}{x^2 - 12x + 61} dx = \pi$
- 15)  $\int_{\sqrt{3}-1}^2 \frac{x + 6\sqrt{3} + 1}{x^2 + 2x + 4} dx = \frac{\pi + \ln 2}{2}$     16)  $\int_{-1}^2 \frac{5x^2 + 3x - 28}{(x-5)(x+2)(x+3)} dx = \ln 10$
- 17)  $\int_{\frac{1}{\sqrt{3}+1}}^2 \frac{36x - 48}{(3x^2 - 6x + 4)^2} dx = (1 - \frac{\pi}{6})\sqrt{3}$     18)  $\int_{-2}^2 \frac{2|x| - x}{4} dx = 2$
- 19)  $\int_{-1}^4 e^{|x-2|} - e^{2-x} dx = (e - \frac{1}{e})^2$     20)  $\int_{-\frac{\pi}{2}}^0 \frac{6 \cos x - 6 \cos^3 x + 4 \sin 2x}{\cos^2 x - 6 \sin^3 x} dx = \ln 3 - \frac{\pi}{\sqrt{2}}$
- 21)  $\int_{-1}^0 (3x^2 + 4x + 1) \ln(x+2)^3 \arctan x dx = \frac{7}{9} + \pi - 7 \ln 2$     22)  $\int_0^{15} \frac{36}{\sqrt{x+1} + \sqrt{x+49}} dx = 53$
- 23)  $\int_0^1 (x^{24} + 12x^{23}) e^{2x-2} dx = \frac{1}{2}$     24)  $\int_1^{\sqrt[5]{2}} \frac{20}{x^{11} + 2x} dx = \ln 2$