ANALISI MATEMATICA
Integrali

Calcolare:

1. $\int \sqrt{x}\,dx$

Ris. $\frac{2}{3}x^{\frac{3}{2}} + c$

2. $\int \frac{dx}{2x+1}$

Ris. $\frac{1}{2}\log|2x+1| + c$

3. $\int x\sqrt{x^2+1}\,dx$

Ris. $\frac{1}{3}(x^2+1)^{\frac{3}{2}} + c$

4. $\int \sin(x)\cos(x)\,dx$

Ris. $\frac{\sin^2(x)}{2} + c$

5. $\int \tan(x)\,dx$

Ris. $-\log|\cos(x)| + c$

6. $\displaystyle\int \frac{\sqrt{\tan(x)}}{\cos^2(x)}\,dx$

Ris. $\frac{2}{3}(\tan(x))^{\frac{3}{2}} + c$

7. $\displaystyle\int \frac{e^{\sqrt{x}}}{\sqrt{x}}\,dx$

Ris. $2e^{\sqrt{x}} + c$

8. $\displaystyle\int \frac{1+\sin(x)}{\cos^2(x)}\,dx$

Ris. $\tan(x) + \frac{1}{\cos(x)} + c$

9. $\displaystyle\int x\log(x)\,dx$

Ris. $\frac{x^2}{2}\left(\log(x) - \frac{1}{2}\right) + c$

10. $\displaystyle\int x\sin(x)\,dx$

Ris. $-x\cos(x) + \sin(x) + c$

11. $\displaystyle\int \frac{x}{e^x}\,dx$

Ris. $-e^{-x}(x+1) + c$

12. $\displaystyle\int \frac{\log(x)}{x^3}\,dx$

Ris. $-\frac{1}{2x^2}(\log(x) + \frac{1}{2}) + c$

13. $\displaystyle\int_8^{10} \frac{x^2+1}{2x}\,dx$

Ris. $9 + \log\left(\sqrt{\frac{5}{4}}\right)$

14. $\displaystyle\int_3^4 x\sqrt{x}\,dx$

Ris. $\frac{2}{5}\left(2^5 - \sqrt{3^5}\right)$

15. $\displaystyle\int \sqrt{1+2x}\,dx$

Ris. $\frac{(1+2x)^{\frac{3}{2}}}{3} + c$

16. $\displaystyle\int_\pi^0 x\cos(x^2)\,dx$

Ris. $-\frac{\sin(\pi^2)}{2}$

17. $\displaystyle\int_2^3 \frac{3x}{x^2-3}\,dx$

Ris. $\frac{3}{2}\log(6)$

18. $\displaystyle\int_0^{\frac{\pi}{2}} e^{\sin(x)}\cos(x)\,dx$

Ris. $e - 1$

19. $\int_1^2 \frac{\log(x)}{\sqrt{x}}\,dx$

Ris. $2\sqrt{2}\log(2) - 4(\sqrt{2}-1)$

20. $\int_1^e \frac{\sin(\log(x))}{x}\,dx$

Ris. 2

21. $\int_1^e \frac{dx}{x\sqrt{1-log^2(x)}}\,dx$

Ris. $\frac{\pi}{2}$

22. $\int \left(1+e^{3x}\right)^2 e^{3x}\,dx$

Ris. $\frac{\left(1+e^{3x}\right)^3}{9} + c$

23. $\int \frac{dx}{x^2+4x+12}$

Ris. $\frac{\sqrt{2}}{4}\arctan\left(\frac{x+2}{\sqrt{8}}\right) + c$

24. $\displaystyle\int \frac{x-3}{x^2-2x-8}\,dx$

Ris. $\frac{1}{6}\log|x-4| + \frac{5}{6}\log|x+2| + c$

25. $\displaystyle\int \frac{x-1}{x^2+6x+9}\,dx$

Ris. $\log|x+3| + \frac{4}{x+3} + c$

26. $\displaystyle\int \frac{2x+2}{x^2-x+4}\,dx$

Ris. $\log\left(x^2-x+4\right) + \frac{8}{5\sqrt{15}}\arctan\left(\frac{2x-1}{\sqrt{15}}\right) + c$

27. $\displaystyle\int \frac{dx}{x^2-2x+1}$

Ris. $\frac{1}{1-x} + c$

28. $\displaystyle\int \frac{dx}{x^2+6x-7}$

Ris. $\log\left|\frac{x-1}{x+7}\right|^{\frac{1}{8}} + c$