Colegio San Buenaventura. Curso 2009-2010

Integrales Indefinidas

1. $\int \frac{2x+1}{x^2+x+1}dx$, *Sol:* $\ln\left|x^2+2x+1\right|+C$
2. $\int \frac{6x^2+4}{x^3+2x-1}dx$, *Sol:* $2\ln\left|x^3+2x-1\right|+C$
3. $\int \frac{\cos x-\operatorname{sen} x}{\operatorname{sen} x+\cos x}dx$,
   Sol: $\ln|\cos x+\operatorname{sen} x|+C$
4. $\int \frac{-2}{\mathrm{e}^{2x}}dx$, *Sol:* $e^{-2x}+C$
5. $\int \frac{(1+\operatorname{tg}^2(\frac{1}{x}))}{x^2}dx$, *Sol:* $-\operatorname{tg}\frac{1}{x}+C$
6. $\int \frac{\cos\sqrt{x}}{2\sqrt{x}}dx$, *Sol:* $\operatorname{sen}\sqrt{x}+C$
7. $\int x^2\operatorname{sen}(x^3-1)dx$,
   Sol: $-\frac{\cos(x^3-1)}{3}+C$
8. $\int \frac{1}{\sqrt{x+1}-\sqrt{x-1}}dx$,
   Sol: $\frac{\sqrt{(x+1)^3}}{3}+\frac{\sqrt{(x-1)^3}}{3}+C$
9. $\int \frac{\sqrt[3]{x}-4\sqrt{x}+x}{\sqrt{x}}dx$,
   Sol: $2\sqrt{x}-4x+\frac{2\sqrt{x^3}}{3}+C$
10. $\int \frac{\ln^2 x+1}{x}dx$, *Sol:* $\frac{\ln^3 x}{3}+\ln x+C$
11. $\int \sqrt{x\ln x}(\ln x+1)dx$,
    Sol: $\frac{2\sqrt{(x\ln x)^3}}{3}+C$
12. $\int \frac{\mathrm{e}^{2x}}{\sqrt{\mathrm{e}^x-1}}dx$,
    Sol: $\frac{2\sqrt{(\mathrm{e}^x-1)^3}}{3}+2\sqrt{e^x-1}+C$
13. $\int x\operatorname{sen} 2xdx$,
    Sol: $\frac{-x\cos 2x}{2}+\frac{\operatorname{sen} 2x}{4}+C$
14. $\int x\,\mathrm{e}^{2x}dx$,
    Sol: $\frac{x\,\mathrm{e}^{2x}}{2}-\frac{\mathrm{e}^{2x}}{4}+C$
15. $\int x\sqrt{2+x}dx$,
    Sol: $\frac{2\sqrt{(2+x)^5}}{5}-\frac{4\sqrt{(2+x)^3}}{3}+C$
16. $\int x\ln xdx$, *Sol:* $\frac{x^2\ln x}{2}-\frac{x^2}{4}+C$
17. $\int \frac{\ln x}{x^2}dx$, *Sol:* $-\frac{\ln x}{x}-\frac{1}{x}+C$
18. $\int x^3\sqrt{a^2-x^2}dx$,
    $a\in\mathbb{R}$, *Sol:* $\frac{-a\sqrt{(a^2-x^2)^3}}{3}-\frac{\sqrt{(a^2-x^2)^5}}{5}+C$
19. $\int \frac{x-5}{x^2-x-2}dx$,
    Sol: $\frac{7}{3}\ln|x+2|-\frac{4}{3}\ln|x-1|+C$
20. $\int \frac{x^2-5x+8}{(x-2)^2x}dx$,
    Sol: $2\ln|x|-\ln|x-2|-\frac{1}{x-2}+C$
21. $\int \frac{x^2+1}{x^2-x}dx$,
    Sol: $x-\ln|x|+\ln|x-1|+C$
22. $\int \frac{1}{(x-a)(x-b)}dx$,
    $a,b\in\mathbb{R}$,
    Sol: Si $a=b$, $-\frac{1}{x-a}+C$
    Si $a\neq b$, $\frac{\ln|x-b|}{b-a}+\frac{\ln|x-a|}{a-b}+C$
23. $\int \frac{5x}{x^3-3x^2+3x-1}dx$,
    Sol: $\frac{-5}{x-1}-\frac{5}{2(x-1)^2}+C$
24. $\int \frac{1}{(x-a)(x+a)}dx$,
    $a\in\mathbb{R}$,
    Sol: Si $a=0$, $-\frac{1}{x}+C$
    Si $a\neq 0$, $\frac{\ln|x-a|}{2a}-\frac{\ln|x+a|}{2a}+C$
25. $\int \frac{2x-4}{(x-1)^2(x^2+1)}dx$, *Sol:* $2\ln|x-1|+\frac{1}{x-1}-\ln(x^2+1)-\operatorname{arc\,tg} x+C$
26. $\int \operatorname{sen}^3 xdx$,
    Sol: $-\cos x+\frac{\cos^3 x}{3}+C$
27. $\int \cos^2 xdx$, *Sol:* $\frac{x}{2}+\frac{\operatorname{sen} 2x}{4}+C$
28. $\int \sqrt{1-x^2}dx$,
    Sol: $\frac{\operatorname{arc\,sen} x}{2}+\frac{x\sqrt{1-x^2}}{2}+C$
29. $\int \sqrt{1+x^2}dx$,
    Sol: $\frac{1}{4}\ln\left|\frac{\sqrt{1+x^2}-x}{\sqrt{1+x^2}}\right|-\frac{1}{4}\frac{\sqrt{1+x^2}}{\sqrt{1+x^2}-x}+\frac{1}{4}\ln\left|\frac{\sqrt{1+x^2}+x}{\sqrt{1+x^2}}\right|-\frac{1}{4}\frac{\sqrt{1+x^2}}{\sqrt{1+x^2}+x}+C$
30. $\int \sqrt{9-4x^2}dx$,
    Sol: $\frac{9\operatorname{arc\,sen}\frac{2x}{3}}{4}+\frac{x\sqrt{9-4x^2}}{2}+C$