

Problemas de integrales

2º de Bachillerato

Comprueba el valor de las siguientes integrales:

$$1. \int \frac{1}{\sqrt{1-9x^2}} dx = \frac{1}{3} \arcsin(3x) + C$$

$$2. \int \frac{1}{\sqrt{4-x^2}} dx = \arcsin \frac{x}{2} + C$$

$$3. \int \frac{1}{1+4x^2} dx = \frac{1}{2} \arctan(2x) + C$$

$$4. \int \frac{1}{9+x^2} dx = \frac{1}{3} \arctan \frac{x}{3} + C$$

$$5. \int \frac{1}{x\sqrt{4x^2-1}} dx = \operatorname{arcsec}(2x) + C$$

$$6. \int \frac{1}{4+(x-1)^2} dx = \frac{1}{2} \arctan \left(\frac{x-1}{2} \right) + C$$

$$7. \int \frac{x^3}{x^2+1} dx = \frac{x^2}{2} - \frac{1}{2} \ln(x^2+1) + C$$

$$8. \int \frac{x^4-1}{x^2+1} dx = \frac{x^3}{3} - x + C$$

$$9. \int \frac{1}{\sqrt{1-(x+1)^2}} dx = \arcsin(x+1) + C$$

$$10. \int \frac{x}{x^4+16} dx = \frac{1}{8} \arctan \left(\frac{x^2}{4} \right) + C$$

$$11. \int \frac{x}{\sqrt{1-x^4}} dx = \frac{1}{2} \arcsin(x^2) + C$$

$$12. \int \frac{1}{x\sqrt{x^4-4}} dx = \frac{1}{4} \operatorname{arcsec} \frac{x^2}{2} + C$$

$$13. \int \frac{\arctan x}{1+x^2} dx = \frac{\arctan^2 x}{2} + C$$

$$14. \int \frac{1}{(x-1)\sqrt{(x-1)^2-4}} dx = \frac{1}{2} \operatorname{arcsec} \left| \frac{x-1}{2} \right| + C$$

$$15. \int \frac{\arcsin x}{\sqrt{1-x^2}} dx = \frac{\arcsin^2 x}{2} + C$$

16. $\int \frac{\arccos x}{\sqrt{1-x^2}} dx = \frac{1}{2}(\pi \cdot \arcsin x - \arcsin^2 x) + C$
17. $\int \frac{x}{\sqrt{1-x^2}} dx = -\sqrt{1-x^2} + C$
18. $\int \frac{x}{1+x^2} dx = \frac{1}{2} \ln|x^2+1| + C$
19. $\int \frac{e^x}{\sqrt{1-e^{2x}}} dx = \arcsin(e^x) + C$
20. $\int \frac{\cos x}{\sqrt{4-\sin^2 x}} dx = \arcsin\left(\frac{\sin x}{2}\right) + C$
21. $\int \frac{1}{9+(x-3)^2} dx = \frac{1}{3} \arctan\left(\frac{x-3}{3}\right) + C$
22. $\int \frac{x+1}{x^2+1} dx = \arctan x + \frac{1}{2} \ln(x^2+1) + C$
23. $\int \frac{1}{\sqrt{x}(1+x)} dx = 2 \arctan(\sqrt{x}) + C$
24. $\int \frac{1}{3+(x-2)^2} dx = \frac{\sqrt{3}}{3} \arctan\left(\frac{\sqrt{3}(x-2)}{3}\right) + C$
25. $\int \frac{\sin x}{1+\cos^2 x} dx = -\arctan(\cos x) + C$
26. $\int \frac{e^{2x}}{4+e^{4x}} dx = \frac{1}{4} \arctan\left(\frac{e^{2x}}{2}\right) + C$
27. $\int \frac{1}{x^2-2x+2} dx = \arctan(x-1) + C$
28. $\int \frac{1}{x^2+6x+13} dx = \frac{1}{2} \arctan\left(\frac{x+3}{2}\right) + C$
29. $\int \frac{2x}{x^2+6x+13} dx = \ln|x^2+6x+13| - 3 \arctan\left(\frac{x+3}{2}\right) + C$
30. $\int \frac{2x-5}{x^2+2x+2} dx = \ln|x^2+2x+2| - 7 \arctan(x+1) + C$
31. $\int \frac{1}{\sqrt{-x^2-4x}} dx = \arcsin\left(\frac{x+2}{2}\right) + C$
32. $\int \frac{x+2}{\sqrt{-x^2-4x}} dx = -\sqrt{-x(x+4)} + C$

33. $\int \frac{1}{\sqrt{-x^2 + 2x}} dx = \arcsin(x - 1) + C$
34. $\int \frac{x - 1}{\sqrt{x^2 - 2x}} dx = \sqrt{x^2 - 2x} + C$
35. $\int \frac{2x - 3}{\sqrt{4x - x^2}} dx = \arcsin\left(\frac{x - 2}{2}\right) - 2\sqrt{4x - x^2} + C$
36. $\int \frac{1}{(x - 1)\sqrt{x^2 - 2x}} dx = \arctan(\sqrt{x^2 - 2x}) + C$
37. $\int \frac{x}{x^4 + 2x^2 + 2} dx = \frac{1}{2} \arctan(x^2 + 1) + C$
38. $\int \frac{x}{\sqrt{9 + 8x^2 - x^4}} dx = \frac{1}{2} \arcsin\left(\frac{x^2 - 4}{5}\right) + C$
39. $\int \frac{1}{\sqrt{-16x^2 + 16x - 3}} dx = \frac{1}{4} \arcsin(4x - 2) + C$
40. $\int \frac{1}{(x - 1)\sqrt{9x^2 - 18x + 5}} dx = \frac{1}{2} \arctan\left(\frac{\sqrt{9x^2 - 18x + 5}}{2}\right) + C$
41. $\int \frac{\sqrt{x - 1}}{x} dx = 2\sqrt{x - 1} - 2 \arctan(\sqrt{x - 1}) + C$
42. $\int \frac{\sqrt{x - 2}}{x + 1} dx = 2\sqrt{x - 2} - 2\sqrt{3} \arctan\left(\frac{\sqrt{3x - 6}}{3}\right) + C$
43. $\int \sqrt{e^x - 3} dx = 2\sqrt{e^x - 3} - 2\sqrt{3} \arctan\left(\frac{\sqrt{3e^x - 9}}{3}\right) + C$
44. $\int \frac{1}{x\sqrt{x} + \sqrt{x}} = 2 \arctan \sqrt{x} + C$