

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C; n \neq -1$$

1. $\int x^5 dx = \frac{x^6}{6} + c$
2. $\int x^{-3} dx = \frac{x^{-2}}{-2} + c$
3. $\int x^{3/2} dx = \frac{x^{5/2}}{5/2} + c = \frac{2}{5}x^{5/2} + c$
4. $\int \sqrt[7]{x^5} dx = \int x^{5/7} dx = \frac{7}{12}x^{12/7} + c$
5. $\int \frac{4}{x^3} dx = \int 4x^{-3} dx = -\frac{4x^{-2}}{2} + c = -2x^{-2} + c$
6. $\int x^3(2x^2 - 5x + 1) dx = \int (2x^5 - 5x^2 + x^3) dx = \frac{x^6}{3} - \frac{5x^3}{3} + \frac{x^4}{4} + c$

$$\int \frac{1}{x} dx = \ln|x| + C$$

7. $\int \frac{4}{3x} dx = \frac{4}{3} \ln|x| + c$
8. $\int \left(\frac{2x^2 - 5x + 1}{x^3} \right) dx = \int \left(\frac{2x^2}{x^3} - \frac{5x}{x^3} + \frac{1}{x^3} \right) dx$
9. $\int \left(\frac{2}{x} - 5x^{-2} + x^{-3} \right) dx = 2 \ln|x| - 5 \frac{x^{-1}}{-1} + \frac{x^{-2}}{-2} + c = 2 \ln|x| + \frac{5}{x} - \frac{1}{2x^2} + c$

$$\int e^x dx = e^x + C$$

10. $\int 4e^x dx = 4e^x + c$
11. $\int 5e^{3x} dx = \frac{5}{3}e^{3x} + c$
12. $\int (5e^{3x} + 2e^{-2x} + 3) dx = \frac{5}{3}e^{3x} + \frac{2}{-2}e^{-2x} + 3x + c = \frac{5}{3}e^{3x} - e^{-2x} + 3x + c$
13. $\int (6e^{3x} + 2x^4 - 1) dx = \frac{6}{3}e^{3x} + 2 \frac{x^5}{5} - x + c = 2e^{3x} + \frac{2x^5}{5} - x + c$
14. $\int e^{-x} dx = \frac{1}{-1}e^{-1x} + c = -e^{-x} + c$

Funciones trigonométricas

$$15. \int (\cos x + \sin x) dx = \sin x - \cos x + c$$

$$16. \int (2 \cos x - 5 \sin x + 8x^5) dx = 2 \sin x + 5 \cos x + \frac{8x^6}{6} + c = 2 \sin x + 5 \cos x + \frac{4}{3}x^6 + c$$

$$17. \int \left(\frac{3}{4} \csc^2 x + e\right) dx = -\frac{3}{4} \cot x + ex + c$$

$$18. \int \left(\frac{3}{4} \csc^2 x + e^x\right) dx = -\frac{3}{4} \cot x + e^x + c$$

$$19. \int \sqrt{1 - \sin^2 x} dx = \int \sqrt{\cos^2 x} dx = \int \cos x dx = \sin x + c$$

$$1 - \sin^2 x = \cos^2 x$$

$$20. \int \sqrt{1 + \tan^2 x} dx = \int \sqrt{\sec^2 x} dx = \int \sec x dx = \ln |\sec x + \tan x| + c$$

$$1 + \tan^2 x = \sec^2 x$$

CAMBIO DE VARIABLE

$$21. I = \int (x^2 + 1)^5 2x dx$$

$$u = x^2 + 1$$

$$du = 2x dx$$

$$I = \int (u)^5 du = \frac{u^6}{6} + c$$

$$I = \frac{(x^2 + 1)^6}{6} + c$$

$$22. I = \int \frac{3x dx}{x^2 + 5}$$

$$u = x^2 + 5$$

$$du = 2x dx$$

$$\frac{du}{2} = x dx$$

$$I = \int \frac{3 \frac{du}{2}}{u} = \frac{3}{2} \int \frac{du}{u} = \frac{3}{2} \ln |u| + c$$

$$I = \frac{3}{2} \ln |x^2 + 5| + c$$

$$23. I = \int \sqrt{1 + 4e^x} e^x dx$$

$$u = 1 + 4e^x$$

$$du = 4e^x dx \leftrightarrow \frac{du}{4} = e^x dx$$

$$\int \sqrt{1 + 4e^x} e^x dx =$$

$$I = \int \sqrt{u} \frac{du}{4} = \frac{1}{4} \int u^{1/2} du = \frac{1}{4} \cdot \frac{2}{3} u^{3/2} + c$$

$$I = \frac{1}{6} (1 + 4e^x)^{3/2} + c$$