

EJERCICIOS DE INTEGRACIÓN INMEDIATA Y POR SUSTITUCIÓN

- 1) $\int \frac{2^x}{3^x} dx$ Sol: $\frac{2^x}{3^x(\ln 2 - \ln 3)} + C$
- 2) $\int e^{e^x} \cdot e^x dx$ Sol: $e^{e^x} + C$
- 3) $\int x e^{-x^2} dx$ Sol: $-\frac{1}{2} e^{-x^2} + C$
- 4) $\int \frac{1}{9+x^2} dx$ Sol: $\frac{1}{3} \operatorname{arctg} \frac{x}{3} + C$
- 5) $\int \frac{dx}{\sqrt{25-x^2}}$ Sol: $\frac{1}{5} \operatorname{arcsen} \frac{x}{5} + C$
- 6) $\int (\operatorname{tg} x)^2 dx$ Sol: $-x + \operatorname{tg} x + C$
- 7) $\int \frac{dx}{1-x}$ Sol: $-\ln(1-x) + C$
- 8) $\int \cot \frac{x}{3} dx$ Sol: $3 \ln \left(\operatorname{sen} \frac{x}{3} \right) + C$
- 9) $\int \left(\operatorname{tg} 4x - \cot \frac{x}{4} \right) dx$ Sol: $-\frac{1}{4} \ln(\cos 4x) - 4 \ln \left(\operatorname{sen} \frac{x}{4} \right) + C$
- 10) $\int \operatorname{sen}^2 x \cdot \cos x dx$ Sol: $\frac{\operatorname{sen}^3 x}{3} + C$
- 11) $\int \frac{\operatorname{tg} x}{\cos^2 x} dx$ Sol: $\frac{\operatorname{tg}^2 x}{2} + C$
- 12) $\int \frac{\ln(x+1)}{x+1} dx$ Sol: $\frac{\ln^2(x+1)}{2} + C$
- 13) $\int \frac{\ln^2 x}{x} dx$ Sol: $\frac{\ln^3 x}{3} + C$
- 14) $\int \frac{\operatorname{arctg} x}{1+x^2} dx$ Sol: $\frac{(\operatorname{arctg} x)^2}{2} + C$
- 15) $\int \frac{x}{x^2+1} dx$ Sol: $\frac{1}{2} \ln(x^2+1) + C$
- 16) $\int \frac{dx}{\cos^2 7x}$ Sol: $1/7 \operatorname{tg} 7x + C$
- 17) $\int \frac{e^x + e^{2x} + e^{3x}}{e^{4x}} dx$ Sol: $-\frac{1}{3} e^{-3x} - \frac{1}{2} e^{-2x} - e^{-x} + C$
- 18) $\int \frac{dx}{x \cdot \ln x}$ Sol: $\ln(\ln x) + C$
- 19) $\int \frac{\cot x}{\operatorname{sen}^2 x} dx$ Sol: $-\frac{\cot^2 x}{2} + C$

$$20) \int x \cdot \sqrt{x^2 + 1} \, dx$$

$$\text{Sol: } \frac{1}{3} \sqrt{(x^2 + 1)^3} + C$$

$$21) \int \frac{\cos 2x}{2 + 3 \operatorname{sen} 2x} \, dx$$

$$\text{Sol: } \frac{1}{6} \ln(2 + 3 \operatorname{sen} 2x) + C$$

$$22) \int a^{x^2} \cdot x \, dx$$

$$\text{Sol: } \frac{a^{x^2}}{2 \ln a} + C$$

$$23) \int (e^{2x})^2 \, dx$$

$$\text{Sol: } \frac{1}{4} e^{4x} + C$$

$$24) \int e^{x^2+4x+3} (x+2) \, dx$$

$$\text{Sol: } \frac{1}{2} e^{x^2+4x+3} + C$$

$$25) \int \frac{e^{2x}}{2 + e^{2x}} \, dx$$

$$\text{Sol: } \frac{1}{2} \ln(2 + e^{2x}) + C$$

$$26) \int \frac{dx}{\sqrt{1-3x^2}}$$

$$\text{Sol: } \frac{1}{\sqrt{3}} \operatorname{arcsen}(\sqrt{3}x) + C$$

$$27) \int \frac{dx}{\sqrt{3-5x^2}}$$

$$\text{Sol: } \frac{1}{\sqrt{5}} \operatorname{arcsen}\left(\sqrt{\frac{5}{3}}x\right) + C$$

$$28) \int \frac{e^x}{\sqrt{1-e^{2x}}} \, dx$$

$$\text{Sol: } \operatorname{arcsen}(e^x) + C$$

$$29) \int \frac{e^x}{(e^x + 4)^2} \, dx$$

$$\text{Sol: } \frac{-1}{e^x + 4} + C$$

$$30) \int \frac{\cos x}{1 + \operatorname{sen}^2 x} \, dx$$

$$\text{Sol: } \operatorname{arctg}(\operatorname{sen} x) + C$$

$$31) \int \frac{2x+1}{x^2+x+4} \, dx$$

$$\text{Sol: } \ln(x^2+x+4) + C$$

$$32) \int 3^{-1/x} \cdot \frac{1}{x^2} \, dx$$

$$\text{Sol: } \frac{3^{-1/x}}{\ln 3} + C$$

$$33) \int \frac{dx}{\sqrt{2x-x^2}}$$

$$\text{Sol: } 2 \operatorname{arcsen}\left(\sqrt{\frac{x}{2}}\right) + C$$

$$34) \int \frac{\operatorname{sen}^3 x}{\cos x} \, dx$$

$$\text{Sol: } \frac{\cos^2 x}{2} - \ln(\cos x) + C$$

$$35) \int \frac{\sqrt{1+\ln x}}{x} \, dx$$

$$\text{Sol: } \frac{2}{3} \sqrt{(1+\ln x)^3} + C$$

$$36) \int \frac{\sqrt{x-1}}{2x} \, dx$$

$$\text{Sol: } \sqrt{x-1} - \operatorname{arctg}(\sqrt{x-1}) + C$$

$$37) (x-1)\sqrt{x^2-2x} \, dx$$

$$\text{Sol: } \frac{1}{3} \sqrt{(x^2-2x)^3} + C$$

$$38) \int \frac{dx}{\sqrt{x}\sqrt{1+\sqrt{x}}}$$

$$\text{Sol: } 4\sqrt{1+\sqrt{x}} + C$$

$$39) \int \frac{dx}{2\operatorname{sen}^2 x + 3\cos^2 x}$$

$$\text{Sol: } \frac{1}{\sqrt{6}} \operatorname{arctg}\left(\sqrt{\frac{2}{3}} \operatorname{tg} x\right) + C$$

$$40) \int e^x \operatorname{sen} e^x dx$$

$$\text{Sol: } -\cos e^x + C$$