

Procedimientos de integración

Ejercicios propuestos

$$1) \int \operatorname{arctg} x \, dx = x \operatorname{arctg} x - \frac{1}{2} \operatorname{Log}(1 + x^2) + C$$

$$2) \int \operatorname{Log}(x + 1) \, dx = x \operatorname{Log}(x + 1) - x + \operatorname{Log}(x + 1) + C$$

$$3) \int x \operatorname{arctg} x \, dx = \frac{x^2}{2} \operatorname{arctg} x - \frac{1}{2} (x - \operatorname{arctg} x) + C$$

$$4) \int x \operatorname{Log}(x + 1) \, dx = \frac{x^2}{2} \operatorname{Log}(x + 1) - \frac{1}{2} \left(\frac{x^2}{2} - x + \operatorname{Log}(x + 1) \right) + C$$

$$5) \int x \operatorname{sen} x \, dx = -x \operatorname{cos} x + \operatorname{sen} x + C$$

$$6) \int x e^x \, dx = x e^x - e^x + C$$

$$7) \int (3x^2 + 2x - 7) \operatorname{cos} x \, dx = (3x^2 + 2x - 13) \operatorname{sen} x + (6x + 2) \operatorname{cos} x + C$$

$$8) \int (5x^2 - 3) 4^{3x+1} \, dx = 4^{3x+1} \left[\frac{5x^2 - 3}{3 \operatorname{Log} 4} - \frac{10x}{(3 \operatorname{Log} 4)^2} + \frac{10}{(3 \operatorname{Log} 4)^3} \right] + C$$

$$9) \int \frac{x}{\operatorname{sen}^2 x} \, dx = -x \operatorname{cotg} x + \operatorname{Log}(\operatorname{sen} x) + C$$

$$10) \int e^x \operatorname{cos} x \, dx = \frac{1}{2} e^x (\operatorname{sen} x + \operatorname{cos} x) + C$$

$$11) \int \arccos\left(\frac{1}{x}\right) dx = x \arccos\left(\frac{1}{x}\right) - \text{Log}\left|x + \sqrt{x^2 - 1}\right| + C$$

$$12) \int x^4 (\text{Log} x)^2 dx = \frac{x^5}{5} (\text{Log} x)^2 - \frac{2}{25} x^5 \text{Log} x + \frac{2}{25} \frac{x^5}{5} + C$$

$$13) \int \frac{\text{Log} x}{\sqrt{x}} dx = 2\sqrt{x} \text{Log} x - 4\sqrt{x} + C$$

$$14) \int x^3 \arcsen x dx = \left(\frac{x^4}{4} - \frac{3}{32}\right) \arcsen x + \frac{1}{32} (2x^2 + 3) x \sqrt{1 - x^2} + C$$

$$15) \int \text{Log}(x + \sqrt{1 + x^2}) dx = x \text{Log}(x + \sqrt{1 + x^2}) - \sqrt{1 + x^2} + C$$

$$16) \int x \cos^2 2x dx = \frac{x^2}{4} - \frac{x}{8} \text{sen} 4x + \frac{1}{32} \cos 4x + C$$

$$17) \int x^2 \text{sen}(\text{Log} x) dx = \frac{x^3}{10} (3 \text{sen}(\text{Log} x) - \cos(\text{Log} x)) + C$$

$$18) \int e^{\sqrt{x}} dx = 2\sqrt{x} e^{\sqrt{x}} - 2e^{\sqrt{x}} + C$$

$$19) \int \text{sen} x \text{Log}(1 + \text{sen} x) dx = -\cos x \text{Log}(1 + \text{sen} x) + x + \cos x + C$$

$$20) \int \frac{x^2 + 1}{(x + 1)^2} e^x dx = e^x - 2 \left(e^x - \frac{x e^x}{x + 1} \right) + C$$

$$21) \int e^{2x} \cos^2 x dx = \frac{e^{2x}}{8} (2 + \text{sen} 2x + \cos 2x) + C$$

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$$22) \int \frac{\arcsen\sqrt{x}}{\sqrt{1-x}} dx = -2\sqrt{1-x} \arcsen\sqrt{x} + 2\sqrt{x} + C$$

$$23) \int \frac{\sen^2 x}{e^x} dx = \frac{e^{-x}}{2} \left(\frac{\cos 2x - 2\sen 2x}{5} - 1 \right) + C$$

$$24) \int \frac{x}{\cos^2 x} dx = x \operatorname{tg} x + \operatorname{Log}|\cos x| + C$$

$$25) \int x \sen x \cos x dx = -\frac{1}{4} x \cos 2x + \frac{1}{8} \sen 2x + C$$

$$26) \int (\arcsen x)^2 dx = x (\arcsen x)^2 + 2\sqrt{1-x^2} \arcsen x - 2x + C$$

$$27) \int x \operatorname{tg}^2 x dx = x \operatorname{tg} x + \operatorname{Log}|\cos x| - \frac{x^2}{2} + C$$

$$28) \int \frac{x e^x}{(1+x)^2} dx = \frac{e^x}{1+x} + C$$

$$29) \int x^2 \operatorname{Log} x dx = \frac{1}{3} x^3 \operatorname{Log} x - \frac{1}{9} x^3 + C$$

$$30) \int \cos x \operatorname{Log}|\sen x| dx = \sen x \operatorname{Log}|\sen x| - \sen x + C$$

$$31) \int e^{2x} \sen x \cos x dx = \frac{e^{2x}}{8} (\sen 2x - \cos 2x) + C$$

$$32) \int \frac{\cos 2x}{e^x} dx = \frac{e^{-x}}{5} (2\sen 2x - \cos 2x) + C$$

$$33) \int \frac{x e^{\operatorname{arcsen} x}}{\sqrt{1-x^2}} dx = \frac{e^{\operatorname{arcsen} x}}{2} (x - \sqrt{1-x^2}) + C$$

$$34) \int \frac{a-2x}{\sqrt{ax-x^2}} \operatorname{arcsen} \left(\sqrt{\frac{a-x}{a+x}} \right) dx = \\ = 2\sqrt{ax-x^2} \operatorname{arcsen} \left(\sqrt{\frac{a-x}{a+x}} \right) + \sqrt{2} a \operatorname{Log}|a+x| + C$$

$$35) \int \frac{\operatorname{Log} x}{x^2} dx = -\frac{1}{x} (1 + \operatorname{Log} x) + C$$

$$36) \int \frac{\operatorname{Log}^2 x}{x^2} dx = -\frac{1}{x} (2 + 2\operatorname{Log} x + \operatorname{Log}^2 x) + C$$

$$37) \int 3^{\sqrt{2x+1}} dx = \frac{3^{\sqrt{2x+1}} \sqrt{2x+1}}{\operatorname{Log} 3} - \frac{3^{\sqrt{2x+1}}}{\operatorname{Log}^2 3} + C$$

$$38) \int (2x^2 - 1) \cos 3x dx = \frac{1}{3} (2x^2 - 1) \operatorname{sen} 3x + \frac{4}{9} x \cos 3x - \frac{4}{27} \operatorname{sen} 3x + C$$

$$39) \int e^{2x} \operatorname{sen} 3x dx = -\frac{3}{13} e^{2x} \cos 3x + \frac{6}{13} \frac{e^{2x} \operatorname{sen} 3x}{3} + C$$

$$40) \int \operatorname{Log}(a^2 + x^2) dx = x \operatorname{Log}(a^2 + x^2) - 2x + 2a \operatorname{arctg} \left(\frac{x}{a} \right) + C$$