

EXERCÍCIOS PROPOSTOS - 01

1. Encontre os integrais indefinidos, onde $u = f(x)$:

1.1 $\int u' u^\alpha dx :$

1.1.1 $\int x^5 dx$

1.1.2 $\int \frac{\sin(x)}{\cos^3(x)} dx$

1.1.3 $\int \frac{4}{\sqrt[4]{2x-1}} dx$

1.2 $\int \frac{u'}{u} dx :$

1.2.1 $\int \frac{1}{1+x} dx$

1.2.2 $\int \frac{4x-8}{3x^2-12x} dx$

1.2.3 $\int \frac{e^{3x}}{2+e^{3x}} dx$

1.3 $\int u' a^u dx, \quad a \in \mathbb{R}^+ \setminus \{1\} :$

1.3.1 $\int e^{5x} dx$

1.3.2 $\int \sin(x) \cdot e^{\cos(x)} dx$

1.3.3 $\int 4x \cdot 7^{x^2+1} dx$

1.4 $\int u' \cdot \sin(u) dx :$

1.4.1 $\int \sin(2x-6) dx$

1.4.2 $\int 2^x \sin(2^x + \pi) dx$

1.4.3 $\int \frac{\sin[\ln(3x)]}{x} dx$

1.5 $\int u' \cdot \cos(u) dx :$

1.5.1 $\int \cos(2x) dx$

1.5.2 $\int \cos[\log(x)] \frac{dx}{x}$

1.5.3 $\int e^{2x} \cos(e^{2x} + 1) dx$

$$1.6 \quad \int u' . \sec^2(u) dx :$$

$$1.6.1 \quad \int \frac{dx}{\cos^2(3x)}$$

$$1.6.2 \quad \int \frac{e^x}{\cos^2(e^x+1)} dx$$

$$1.6.3 \quad \int \frac{\sec^2(\sqrt{x}+3)}{\sqrt{x}} dx$$

$$1.7 \quad \int u' . \operatorname{cosec}^2(u) dx :$$

$$1.7.1 \quad \int \frac{12x}{\operatorname{sen}^2(1-3x^2)} dx$$

$$1.7.2 \quad \int \frac{\operatorname{cosec}^2(1+e^{-x}+1)}{e^x} dx$$

$$1.7.3 \quad \int \frac{\operatorname{cosec}^2(3\sqrt[3]{x^2}+2)}{\sqrt[3]{x}} dx$$

$$1.8 \quad \int \frac{u'}{u^2+1} dx :$$

$$1.8.1 \quad \int \frac{4}{3x^2+2} dx$$

$$1.8.2 \quad \int \frac{\cos(x)}{\operatorname{sen}^2(x)+1} dx$$

$$1.8.3 \quad \int \frac{dx}{\sqrt{x}(x+1)}$$

$$1.9 \quad \int \frac{u'}{u^2+1} dx :$$

$$1.9.1 \quad \int \frac{1}{\sqrt{1-4x^2}} dx$$

$$1.9.2 \quad \int \frac{dx}{\sqrt{9-4x^2}}$$

$$1.9.3 \quad \int \frac{dx}{(1+x^2)\sqrt{1-[\operatorname{artg}(x)]^2}}$$

SOLUÇÕES

$$1.1.1 \quad \frac{x^6}{6} + C$$

$$1.1.2 \quad \frac{1}{2\cos^2(x)} + C$$

$$1.1.3 \quad \frac{8}{3\sqrt[4]{(2x-1)^3}} + C$$

$$1.2.1 \quad \log|x+1| + C$$

$$1.2.2 \quad 2\log|x^2-4x|/3 + C$$

$$1.2.3 \quad \log(2+e^{3x})/3 + C$$

$$1.3.1 \quad e^{5x}/5 + C$$

$$1.3.2 \quad -e^{\cos(x)} + C$$

$$1.3.3 \quad 2 \cdot 7^{x^2+1}/\ln(7) + C$$

$$1.4.1 \quad -\cos(2x-6)/2 + C$$

$$1.4.2 \quad -\cos(2^x + \pi)/\ln(2) + C$$

$$1.4.3 \quad -\cos[\ln(3x)] + C$$

$$1.5.1 \quad \sin(2x)/2 + C$$

$$1.5.2 \quad \sin[\log(x)] + C$$

$$1.5.3 \quad \sin(e^{2x}+1)/2 + C$$

$$1.6.1 \quad \operatorname{tg}(3x)/3 + C$$

$$1.6.2 \quad \operatorname{tg}(e^{x+1})/e + C$$

$$1.6.3 \quad 2\operatorname{tg}(\sqrt{x}+3) + C$$

$$1.7.1 \quad 2\cotg(1-3x^2) + C$$

$$1.7.2 \quad \cotg(1+e^{-x+1})/e + C$$

$$1.7.3 \quad \cotg(3\sqrt[3]{x^2}+2)/2 + C$$

$$1.8.1 \quad \frac{2\sqrt{6}}{3} \operatorname{arctg}\left(\sqrt{\frac{3}{2}}x\right) + C$$

$$1.8.2 \quad \operatorname{arctg}(\sin(x)) + C$$

$$1.8.3 \quad 2\operatorname{arctg}(\sqrt{x}) + C$$

$$1.9.1 \quad \arcsen(2x)/2 + C$$

$$1.9.2 \quad \arcsen(2x/3)/2 + C$$

$$1.9.3 \quad \arcsen(\operatorname{arctg}(x)) + C$$