UNIVALI

Escola do Mar,
Ciência e Tecnologia

Cálculo II

Curso de Ciência da Computação
Campus Kobrasol

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Exercícios: Determine a integral indefinida das seguintes funções:

a. $\int x.\cos 2x\, dx$

b. $\int (2t^3+1)^3 t^2\, dt$

c. $\int (3x-1)\left(\sqrt{x}+\frac{2}{3x^2}\right) dx$

d. $\int 3x\sqrt{2x^2-4}dx$

e. $\int (2+e^{-2x})\,\text{sen}\, 2x\, dx$

f. $\int t^2.\cos(1-t^3)\, dt$

g. $\int \frac{x}{\sqrt{2+2x^2}} dx$

h. $\int \left(\sqrt[4]{x}-\frac{1}{4\sqrt[5]{x}}\right) dx$

i. $\int x^2 e^{-3x}\, dt$

j. $\int sen^2 x.\cos x\, dx$

k. $\int \frac{x}{\sqrt{1+x}}\,dx$

l. $\int 7x^{\frac{5}{2}} + 4\,dx$

m. $\int \frac{t^5}{2} - \frac{4}{t^{-3}} + 3t\,dt$

n. $\int u^2 \cos 3u\,du$

o. $\int 4x^2\sqrt{3+4x^3}\,dx$

p. $\int \frac{e^{-2t}}{2+3e^{-2t}}\,dt$

q. $\int x^3 e^{-x}\,dx$

r. $\int 3t\cos(3t^2)\,dt$

s. $\int (2x+5)\left(\sqrt{x} + \frac{3}{x^2} + x^{-4/3}\right)dx$

t. $\int u^3(-2u+u^{-5})\,du$

u. $\int (5+e^{-3x})\,\text{sen}\,2x\,dx$

v. $\int 3x\sqrt{2x^2-4}\,dx$

Respostas:

a. $\frac{x.\text{sen } 2x}{2} + \frac{\cos 2x}{4} + C$

b. $\frac{(2t^3+1)^4}{24} + C$

c. $\frac{6}{5}\sqrt{x^5} - \frac{2}{3}\sqrt{x^3} + 2\ln|x| + \frac{2}{3x} + C$

d. $\frac{\sqrt{(2x^2-4)^3}}{2} + C$

e. $-\cos 2x - \frac{e^{-2x}}{4}(\cos 2x + \text{sen } 2x) + C$

f. $-\frac{\sin(1-t^3)}{3} + C$

g. $\frac{\sqrt{2+2x^2}}{2} + C$

h. $\frac{4\sqrt[4]{x^5}}{5} - \frac{5\sqrt[5]{x^4}}{16} + C$

i. $\frac{e^{-3x}}{3}\left(-x^2 - \frac{2x}{3} - \frac{2}{9}\right) + C$

j. $\frac{\text{sen}^3 x}{3} + C$

k. $\frac{2}{3}\sqrt{(1+x)^3} - 2\sqrt{(1+x)} + C$

l. $2x^{\frac{7}{2}} + 4x + C$

m. $\frac{t^6}{12} - t^4 + \frac{3}{2}t^2 + C$

n. $\frac{u^2 sen3u}{3} + \frac{2ucos3u}{9} - \frac{2sen3u}{27} + C$

o. $\frac{2\sqrt{(3+4x^3)^3}}{9} + C$

p. $-\frac{\ln|2+3e^{-2t}|}{6} + C$

q. $-e^{-x}(x^3 + 3x^2 + 6x + 6) + C$

r. $\frac{sen(3t^2)}{2} + C$

s. $\frac{4}{5}x^2\sqrt{x} + \frac{10}{3}x\sqrt{x} + 6\ln|x| - \frac{15}{x} + 3\sqrt[3]{x^2} - \frac{15}{\sqrt[3]{x}} + C$

t. $-\frac{2u^5}{5} - \frac{1}{u} + C$

u. $-\frac{5}{2}\cos 2x - \frac{2}{13}e^{-3x}\cos 2x - \frac{3}{13}e^{-3x}sen\ 2x + C$

v. $\frac{\sqrt{(2x^2-4)^3}}{2} + C$