INSTITUTO FEDERAL DE EDUCAÇÃO, CIÊNCIA E TECNOLOGIA
SUL-RIO-GRANDENSE
Campus Passo Fundo

Engenharia Civil e Engenharia Mecânica

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Exercícios

Calcule as seguintes integrais *OBS:* O valor ao lado é a resposta.

1) $\int_1^2 5dx = 5$

2) $\int_1^2 8x^3 dx = 30$

3) $\int_0^1 4e^{-3x}dx = \frac{4}{3}\left(1-e^{-3}\right)$

4) $\int_1^4 3\sqrt{x}dx = 14$

5) $\int_0^5 e^{-2t}dt = \frac{1}{2}\left(1-e^{-10}\right)$

6) $\int_3^6 x^{-1}dx = \ln 2$

7) $\int_{-1}^1 \frac{4}{(t+2)^3}dt = 16/9$

8) $\int_2^3 (5-2t)^4 dt = 1/5$

9) $\int_0^3 (x^3+x-7)dx = 15/4$

10) $\int_2^4 (x^2+\frac{2}{x^2}-\frac{1}{x+5})dx = \frac{115}{6} - 2\ln(3) + \ln(7)$

Calcule as integrais definidas pelo teorema fundamental do cálculo

a) $\int_1^2 \left(x^3.\sqrt{x^4+5}\right)dx = 13{,}59$

b) $\int_0^3 (-x^3+\sqrt[3]{x})dx = -17{,}005$

c) $\int_0^2 \frac{dx}{(x+3)} = 0{,}51$

d) $\int_1^2 x.\ln(x)dx = 0{,}64$

e) $\int_0^2 -x.\ln x dx = -0{,}39$ f) $\int_0^1 \frac{x^2+1}{\sqrt{x^3+3x}}dx = 4/3$

g) $\int_2^7 (x^2-2x)dx = 200/3$

h) $\int_0^4 (x^3-x^2+1)dx = 140/3$

i) $\int_{-1}^3 (3x^3+5x-1)dx = 76$

j) $\int_{-2}^0 3x\sqrt{4-x^2}dx = -8$

l) $\int_0^1 \frac{(x^2+2x)}{\sqrt[3]{x^3+3x^2+4}}dx = 2-\sqrt[3]{2}$

m) $\int_0^{15} \frac{x}{(1+x)^{3/4}}dx = \frac{104}{5}$

n) $\int_{-1}^3 \frac{dx}{(x+4)^3} = \frac{20}{441}$

o) $\int_1^3 \frac{xdx}{(3x^2-1)^3} =$