



UNIVERSIDADE FEDERAL DA GRANDE DOURADOS

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Cálculo II

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(1) Calcule a integral.

a)  $\int \frac{x^2}{x+1} dx$

b)  $\int \frac{y}{y+2} dy$

c)  $\int_0^1 \frac{x-1}{x^2+3x+2} dx$

d)  $\int \frac{5x+1}{(2x+1)(x-1)} dx$

e)  $\int \frac{ax}{x^2-bx} dx$

f)  $\int \frac{x^3+4}{x^2+4} dx$

g)  $\int_0^1 \frac{x^3+2x}{x^4+4x^2+3} dx$

h)  $\int \frac{1}{\sqrt{x}-\sqrt[3]{x}} dx$   
(use a substituição  $u = \sqrt[6]{x}$ )

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

j)  $\int_3^4 \frac{x^3-2x^2-4}{x^3-2x^2} dx$

k)  $\int \frac{dx}{x(x^2+4)^2} dy$

### Gabarito

a)  $\frac{x^2}{2} - x + \ln|x+1| + C$

b)  $y - 2 \ln|y+2| + C$   
ou  $y+2 - 2 \ln|y+2| + C$

c)  $3 \ln 3 - 5 \ln 2$

d)  $\frac{\ln|2x+1|}{2} + 2 \ln|x-1| + C$

e)  $a \ln|x-b| + C$

f)  $\frac{x^2}{2} - 2 \ln|x^2+4| + 2tg^{-1}(\frac{x}{2}) + C$

g)  $\frac{1}{4}(\ln|x^2+3| + \ln|x^2+1|) + C$

h)  $2\sqrt{x} + 3\sqrt[3]{x} + 6\sqrt[6]{x} + 6 \ln|\sqrt[6]{x}-1| + C$

i)  $2 \ln|e^x+2| - \ln|e^x+1| + C$

j)  $\ln 3 - \ln 2 - \frac{1}{6}$

k)  $\frac{\ln|x|}{16} - \frac{\ln|x^2+4|}{32} + \frac{1}{8(x^2+4)} + C$