UNIVERSIDADE FEDERAL DA GRANDE DOURADOS
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Cálculo II 21 de Outubro de 2017

(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) $\ln 2 - \ln 3 + \frac{7}{6}$ k) $\frac{\ln|x|}{16} - \frac{\ln|x^2+4|}{32} + \frac{1}{8(x^2+4)} + C$