(1) Calcule a integral.

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

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

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

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

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

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

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

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

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

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

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

Gabarito

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

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

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

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

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

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

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

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) $\ln 3 - \ln 2 - \dfrac{1}{6}$

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