Cálculo diferencial e integral

Integral indefinida: Frações parciais

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1. Escreva as funções a seguir na forma de frações parciais

   a) $f(x) = \dfrac{2x}{(x+3)(3x+1)}$ *b)* $f(x) = \dfrac{1}{x^3+2x^2+x}$ *c)* $f(x) = \dfrac{x}{x^2+x-2}$

   d) $f(x) = \dfrac{x^2}{x^2+x+2}$ *e)* $f(x) = \dfrac{x^3+x^2}{x^2+x-2}$ *f)* $f(x) = \dfrac{5x+3}{x^2-8x+12}$

2. Resolva as integrais das funções propostas no exercício 1.

3. Resolva as integrais

   a) $\displaystyle\int \frac{5x+1}{(2x+1)(x-1)}\,dx$ *b)* $\displaystyle\int \frac{dx}{(x+a)(x+b)}$ *c)* $\displaystyle\int \frac{dx}{(x+1)(x+2)(x+3)}$

   d) $\displaystyle\int \frac{x}{x^2+6x+6}\,dx$ *e)* $\displaystyle\int \frac{dx}{x^4}$ *f)* $\displaystyle\int \frac{2x^2+5}{(x^2+1)(x^2+4)}\,dx$

   g) $\displaystyle\int \frac{2x+5}{x^2-4}\,dx$ *h)* $\displaystyle\int \frac{x^3}{x^2-4}\,dx$ *i)* $\displaystyle\int \frac{x^3-1}{4x^3-x}\,dx$

   j) $\displaystyle\int \frac{5x^2-2x+4}{(x-2)^3}\,dx$ *k)* $\displaystyle\int \frac{x^2+1}{(x-1)(x+2)^3}\,dx$ *l)* $\displaystyle\int \frac{dx}{x(x+1)^2}$

   m) $\displaystyle\int \frac{x^3+x+1}{x(x^2+1)}\,dx$ *n)* $\displaystyle\int \frac{x^2-8x+7}{(x^2-3x-10)^2}\,dx$ *o)* $\displaystyle\int \frac{2x^3-6x^2-2}{x(x-2)(x^2+1)}\,dx$