MATEMATRIX
LECȚII DE MATEMATICĂ
PRÊT-À-PORTER

Primitive uzuale 3

1. $\int \frac{\sqrt{x^2+3}+2\sqrt{x^2-3}}{\sqrt{x^4-9}}dx, x \in (\sqrt{3}, \infty)$.

$\int \frac{\sqrt{x^2+3}+2\sqrt{x^2-3}}{\sqrt{x^4-9}}dx, x \in (\sqrt{3}, \infty) = \int \frac{\sqrt{x^2+3}}{\sqrt{x^4-9}}dx + 2\int \frac{\sqrt{x^2-3}}{\sqrt{x^4-9}}dx=$

$= \int \frac{1}{\sqrt{x^2+3}}dx + 2\int \frac{1}{\sqrt{x^2-3}}dx = \ln(x+\sqrt{x^2+3}) + \ln(x-\sqrt{x^2-3}) + \mathscr{C}$.

2. $\int \frac{1}{x^4-1}dx, x \in (1,\infty)$.

$\int \frac{1}{x^4-1}dx = \frac{1}{2}\int \frac{x^2+1-x^2+1}{(x^2+1)(x^2-1)} = \frac{1}{2}\int \left(\frac{1}{x^2-1} - \frac{1}{x^2+1}\right)dx =$

$= \frac{1}{2}\left(\frac{1}{2}\ln\frac{x-1}{x+1} - arctgx\right) + \mathscr{C}$.

3. $\int \frac{1-x}{\sqrt{4-x^2}}dx, x \in (-2,2)$.

$\int \frac{1-x}{\sqrt{4-x^2}}dx = \int \frac{1}{\sqrt{4-x^2}}dx + \int \frac{-x}{\sqrt{4-x^2}}dx = arcsin\frac{x}{2} + \sqrt{4-x^2} + \mathscr{C}$.