

ANÁLISE MATEMÁTICA I

Ficha N°10

1. Determine as primitivas das seguintes funções:

(a) $f(x) = x(x + a)(x + b)$;

(b) $f(x) = \frac{1}{\sqrt[n]{x}}$;

(c) $f(x) = (\sqrt{x} + 1)(x - \sqrt{x} + 1)$;

(d) $f(x) = \frac{(x^2+1)(x^2-2)}{\sqrt[3]{x^2}}$;

(e) $f(x) = \frac{(x^m - x^n)^2}{\sqrt{x}}$;

(f) $f(x) = \frac{(\sqrt{a} - \sqrt{x})^4}{\sqrt{ax}}$;

(g) $f(x) = 3^x e^x$;

(h) $f(x) = \frac{a}{a-x}$;

(i) $f(x) = \frac{x^2+1}{x-1}$;

(j) $f(x) = \frac{x^2+5x+7}{x+3}$;

(k) $f(x) = \frac{x^4+x^2+1}{x-1}$;

(l) $f(x) = \left(a + \frac{b}{x-a}\right)^2$;

(m) $f(x) = \sqrt{a - bx}$;

(n) $f(x) = \frac{x}{\sqrt{x^2+1}}$;

(o) $f(x) = \frac{\sqrt{x} + \ln x}{x}$;

(p) $f(x) = \frac{x+3}{7-5x^2}$;

(q) $f(x) = \frac{\arctg \frac{x}{2}}{4+x^2}$;

(r) $f(x) = \frac{x - \sqrt{\arctg 2x}}{1+4x^2}$;

(s) $f(x) = \frac{1}{\sqrt{(1+x^2) \ln(x + \sqrt{1+x^2})}}$;

(t) $f(x) = \left(e^{\frac{x}{a}} + e^{-\frac{x}{a}}\right)^2$;

(u) $f(x) = \frac{(a^x - b^x)^2}{a^x b^x}$;

(v) $f(x) = e^{-(x^2+1)} x$;

(w) $f(x) = \frac{5\sqrt{x}}{\sqrt{x}}$;

(x) $f(x) = e^x \sqrt{a - be^x}$.

2. Determine as primitivas das seguintes funções:

(a) $f(x) = \frac{1}{\sin x \cos x};$

(b) $f(x) = \sqrt{1 + 3 \cos^2 x} \sin(2x);$

(c) $f(x) = \frac{\sqrt{1+\ln x}}{x};$

(d) $f(x) = \frac{1}{\cos^2 x \sqrt{4-\operatorname{tg}^2 x}};$

(e) $f(x) = e^{\sin^2 x} \sin(2x);$

(f) $f(x) = \frac{\sin x \cos x}{\sqrt{2-\sin^4 x}};$

(g) $f(x) = \frac{\arcsin x + x}{\sqrt{1-x^2}};$

(h) $f(x) = \frac{\operatorname{tg} x}{\sqrt{1+\cos^2 x}};$

(i) $f(x) = \frac{1}{1+\cos^2 x};$

(j) $f(x) = \sqrt{\frac{\ln(x+\sqrt{x^2+1})}{1+x^2}}.$