

6^a Lista de Cálculo ADS - Integral Indefinida e Integral Definida

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1. Calcule as integrais indefinidas nos casos abaixo:

(a) $\int \frac{1}{x} dx$

(b) $\int \frac{1}{x^2} dx$

(c) $\int \frac{5}{x^3} dx$

(d) $\int \left(x^5 + \frac{1}{x^3} + 4 \right) dx$

(e) $\int \left(\frac{x^2}{2} + x \right) dx$

(f) $\int x dx$

(g) $\int x^3 dx$

(h) $\int (3x + 1) dx$

(i) $\int (x^2 + x + 1) dx$

(j) $\int (x^3 + 2x + 3) dx$

(k) $\int (3x^4 + 2x^2 - 3x + \cos x) dx$

(l) $\int \sqrt{x} dx$

(m) $\int \left(3x^2 + x + \frac{1}{x^3} \right) dx$

(n) $\int \left(\frac{2}{x} + \frac{3}{x^2} \right) dx$

(o) $\int \left(2x^3 - \frac{1}{x^4} \right) dx$

(p) $\int \frac{x^2 + 1}{x} dx$

(q) $\int \left(3\sqrt[5]{x^2} + 3 \right) dx$

(r) $\int (2 + \sqrt[4]{x}) dx$

(s) $\int (3 + \cos x) dx$

(t) $\int (x^2 + \sin x) dx$

(u) $\int (x + e^x - 3) dx$

2. (Calcule as integrais nos casos abaixo:

(a) $\int_0^1 (x + 3) \, dx$

(b) $\int_{-1}^1 (2x + 1) \, dx$

(c) $\int_0^4 \frac{1}{2} \, dx$

(d) $\int_{-2}^1 (x^2 - 1) \, dx$

(e) $\int_1^3 \, dx$

(f) $\int_{-1}^2 4 \, dx$

(g) $\int_1^3 \frac{1}{x^3} \, dx$

(h) $\int_{-1}^1 5 \, dx$

(i) $\int_0^2 (x^2 + 3x - 3) \, dx$

(j) $\int_0^1 (2x + 3) \, dx$

(k) $\int_{-2}^1 (x^2 - 5x - 2) \, dx$

(l) $\int_1^2 (2x^3 - 3x^2 - x + 1) \, dx$

(m) $\int_0^4 \sqrt{x} \, dx$

(n) $\int_0^1 \left(5x^3 - \frac{1}{2} \right) \, dx$

(o) $\int_1^3 \left(5 + \frac{1}{x^2} + x \right) \, dx$

(p) $\int_{-1}^0 (x^3 - 2x + 3) \, dx$

(q) $\int_{-3}^3 x^3 \, dx$

(r) $\int_0^1 (x + \sqrt[4]{x}) \, dx$

(s) $\int_0^1 \sqrt[8]{x} \, dx$

(t) $\int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \cos x \, dx$