



Exercícios

1) Calcular as integrais iteradas

$$a) \int_0^1 \int_0^2 (x+3) dy dx$$

$$c) \int_0^1 \int_0^4 (x^2 y) dx dy$$

$$e) \int_0^{\ln 3} \int_0^{\ln 2} (e^{x+y}) dy dx$$

$$g) \int_{-1}^0 \int_0^5 dx dy$$

$$i) \int_0^1 \int_0^1 \frac{x}{(xy+1)^2} dy dx$$

$$k) \int_0^{\ln 2} \int_0^1 (xye^{y^2 x}) dy dx$$

$$b) \int_{-1}^1 \int_0^3 (x^2 - 4y) dy dx$$

$$d) \int_{-2}^0 \int_{-1}^2 (x^2 + y^2) dx dy$$

$$f) \int_0^2 \int_0^1 (y \operatorname{sen}(x)) dy dx$$

$$h) \int_{-3}^4 \int_0^7 dy dx$$

$$j) \int_{\frac{\pi}{2}}^{\pi} \int_0^1 (x \cos(xy)) dy dx$$

$$l) \int_3^4 \int_1^2 \frac{1}{(x+y)^2} dy dx$$

2) Nos exercícios abaixo, calcular as integrais duplas na região retangular R:

$$a) \iint_R 4xy^3 dA \quad R = \{(x, y) : -1 \leq x \leq 1, -2 \leq y \leq 2\}$$

$$b) \iint_R \frac{xy}{\sqrt{x^2 + y^2 + 1}} dA \quad R = \{(x, y) : 0 \leq x \leq 1, 0 \leq y \leq 1\}$$

$$c) \iint_R x\sqrt{1-x^2} dA \quad R = \{(x, y) : 0 \leq x \leq 1, 2 \leq y \leq 3\}$$

$$d) \iint_R (x \operatorname{sen} y - \operatorname{sen} x) dA \quad R = \{(x, y) : 0 \leq x \leq \frac{\pi}{2}, 0 \leq y \leq \frac{\pi}{3}\}$$

Respostas:

1) a) 7 b) 52/3 c) 2 d) 14 e) 2

f) $\cong 0,01$ ou $-\frac{\cos(2)}{2} + \frac{1}{2}$ g) 3 h) 20 i) $\cong 0,30$

j) -2 k) $-\frac{\ln(2)+1}{2}$ l) $-\ln(6) + 2\ln(5) - \ln(4)$

2) a) 0 b) $\sqrt{3} - \frac{4\sqrt{2}}{3} + \frac{1}{3}$ c) 1/3 d) $-\frac{\pi}{3} + \frac{\pi^2}{16}$