

MAT0211-45 - Cálculo III
Respostas da Lista de Exercícios 6

1. (a) $1/3$.
(b) 1 .
(c) $2\sqrt{3} - 38/3$.
(d) $\pi^2/4$.
(e) 2 .
(f) 2π .
(g) 6 .
(h) $t^{-3}(e^{t^2} - e^t) + t^{-2} - t^{-1}$.
(i) $1/6$.
2. (a) $-3\pi/2$.
(b) $\cos 1 + \sin 1 - \cos 2 - 2 \sin 2 + 3/2$.
(c) $e - e^{-1}$.
(d) $\frac{7}{3} \log 2$.
3. 6 .
4. $80/3$.
5. (a) $8/3$.
(b) 320π .
6. (a) $\int_0^1 \int_x^1 f(x, y) dy dx$.
(b) $\int_0^4 \int_{x/2}^{\sqrt{x}} f(x, y) dy dx$.
(c) $\int_1^2 \int_1^{y^2} f(x, y) dx dy$.
(d) $\int_0^1 \int_{2-y}^{1+\sqrt{1-y^2}} f(x, y) dx dy$.

- (e) $\int_0^8 \int_{-2\sqrt{y-1}}^{2-y} f(x, y) dx dy + \int_{-1}^0 \int_{-2\sqrt{y-1}}^{2\sqrt{y-1}} f(x, y) dx dy.$
- (f) $\int_0^1 \int_{e^y}^e f(x, y) dx dy.$
- (g) $\int_{-1}^0 \int_{-\sqrt{1-y^2}}^{\sqrt{1-y^2}} f(x, y) dx dy + \int_0^1 \int_{-\sqrt{1-y}}^{\sqrt{1-y}} f(x, y) dx dy.$
- (h) $\int_0^1 \int_{\sqrt{y}}^{\sqrt[3]{y}} f(x, y) dx dy.$
- (i) $\int_{-1}^0 \int_{-2 \arcsen y}^{\pi} f(x, y) dx dy + \int_0^1 \int_{\arcsen y}^{\pi - \arcsen y} f(x, y) dx dy.$
- (j) $\int_{-2}^0 \int_{2x+4}^{4-x^2} f(x, y) dy dx.$
- (k) $\int_0^1 \int_x^{2-x} f(x, y) dy dx.$
7. (a) $\bar{x} = -1/2$ e $\bar{y} = 8/5.$
 (b) $\bar{x} = (\sqrt{2} + 1) \left(\frac{\pi}{4}\sqrt{2} - 1\right)$ e $\bar{y} = (\sqrt{2} + 1)/4.$
8. $\bar{x} = \frac{2}{3}\|\vec{AB}\|$ e $\bar{y} = \frac{2}{3}\|\vec{AB}\|,$ tomando os eixos Ox e Oy paralelos aos lados \vec{AB} e \vec{AD} e com a origem em $A.$