MAT0211-45 - Cálculo III
Respostas da Lista de Exercícios 8

1. (a) $\log\sqrt{2} - 5/16$.
   (b) $1/48$.
   (c) $4\pi abc/5$.
   (d) $\pi/6$.

2. (a) $\int_0^1 \int_{-z}^{z} \int_{-\sqrt{z^2-x^2}}^{\sqrt{z^2-x^2}} f(x,y,z)dy\,dx\,dz$.
   (b) $\int_0^1 \int_0^{x^2} \int_0^1 f(x,y,z)dy\,dz\,dx + \int_0^1 \int_{x^2}^{1+x^2} \int_{\sqrt{z-x^2}}^1 f(x,y,z)dy\,dz\,dx$.

3. (a) $16\pi/3$.
   (b) $1/6$.

4. (a) $4\pi a^3/3$.
   (b) $4\pi(b^3 - a^3)/3$.
   (c) $\frac{4}{3}\pi R^3(a^2 + b^2 + c^3)^{-1/2}$.

5. (a) $\frac{2}{3}\pi(5\sqrt{5} - 4)$.
   (b) $32/9$.

6. -

7. o centro de massa fica no eixo do cone, a uma distância de $2h/5$ da base.

8. (a) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = z$.
   (b) $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$.
   (c) $b^2 = z^2 + (\sqrt{x^2 + y^2} - a)^2$.

9. (a)
$$|abc| \cosh v \left[\left(\frac{\operatorname{sen}^2 u}{a^2} + \frac{\cos^2 u}{b^2} \right) \cosh^2 v + \frac{\operatorname{senh}^2 v}{c^2} \right]^{1/2}$$
(b) $\sqrt{128v^2 + 4}$.

10. (a) $a^2(2\pi - 4)$.
(b) 4.
(c) $\frac{\sqrt{2}}{4}\pi a^2$.

11. -