CARNEGIE MELLON UNIVERSITY
Department of Mathematics

21-259 Calculus in 3-D
Spring 2003

Answers to Review Problems for Test 3

1. (a) $\frac{1}{3}$
   (b) $\frac{\pi}{2}(e^4 - 1)$
2. $\frac{5\pi}{24}$
3. $\frac{8}{3}$
4. $4\pi\sqrt{3}$
5. 6
6. $\frac{\pi}{12}$
7. (a) $2\pi + \frac{\pi^3}{3}$
   (b) $2e$
   (c) $\frac{3}{2}$
8. (a) $\frac{19}{28}$
   (b) $\frac{\pi}{2} + \frac{1}{3}$
9. $f(x, y) = x^2y + \frac{1}{2}x^2 + \frac{1}{4}y^4$
10. $e + \frac{1}{4}$
11. $3\pi + 8$
12. $-\frac{3\pi}{2}$
14. (a) $3\pi\sqrt{2}$
    (b) $\frac{50\pi\sqrt{2}}{3}$
15. 54π