18.022: Multivariable calculus - problem set 10 - fall 2006

Due by 1:45 PM, Room 2-106, Friday 11/17.

Note that we use 3rd edition of the text for reference and earlier editions may number problems differently. Whilst you may attempt problems in any order, graders will appreciate if you hand in your problems in order. By all means, please try to help the graders.

1. (5 points) 5.4.11

2. (5 points) 5.4.12

3. (5 points) 5.4.15

4. (5 points) 5.4.19

5. (5 points) 5.4.22

6. (5 points) 5.5.2

7. (5 points) 5.5.6

8. (5 points) 5.5.8

9. (5 points) 5.5.9

10. (5 points) 5.5.10

11. (5 points) 5.5.11

12. (5 points) 5.5.12

13. (10 points)

    (a) Calculate the triple integral

    $$\int_{-1}^{1}(\int_{-\sqrt{1-x^2}}^{\sqrt{1-x^2}}(\int_{-\sqrt{1-x^2-y^2}}^{\sqrt{1-x^2-y^2}} 2\sqrt{1-x^2-y^2-z^2}dz)dy)dx.$$

    (b) What did you just calculate?

Total: 70 points