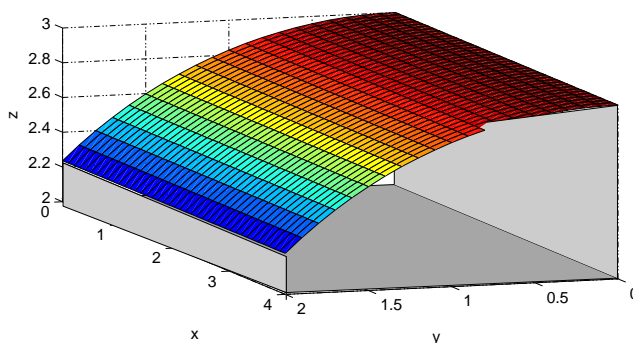


Answers to Even Exercises, Homework Set 7

Section 12.1 # 6 Using lower left corners as points of evaluation: volume ≈ 3350 .
 Using upper right corners, volume ≈ 3500 . The average of these two approximations will likely be a closer approximation, so the average gives volume ≈ 3425 .

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18 Since $0 \leq \sin(x + y) \leq 1$ for any x and y , we can use property 9 to see that:

$$\int \int_R 0 \, dA \leq \int \int_R \sin(x + y) \, dA \leq \int \int_R 1 \, dA$$

and by problem # 17, which tells us the double integral of a constant over a rectangle we have

$$\int \int_R 0 \, dA = 0(1-0)(1-0) = 0 \quad \int \int_R 1 \, dA = 1(1-0)(1-0) = 1$$

Putting everything together:

$$0 \leq \int \int_R \sin(x + y) \, dA \leq 1$$

Section 12.2 # 2 (a) $\frac{8}{x+2}$, (b) $y \ln(5) - y \ln(2) = y \ln(5/2)$

12 $\frac{4\sqrt{2}-2}{15}$

Section 12.3# 50 The region D is below. The integral, after changing the order of integration is:

$$\int \int_D f(x, y) dA = \int_0^2 \int_{x/2}^{3-x} f(x, y) dy dx$$

