

Stat 400, section 5.0 supplement – Practice in Evaluating Double Integrals

notes by Tim Pilachowski

1. Evaluate $\int_4^8 \sqrt{6x+y} \, dx$.

2. Evaluate $\int_{-1}^1 e^{x+4y} \, dy$.

3. Evaluate $\int_1^2 \int_0^3 x^3 y + y \, dx \, dy$.

4. Evaluate $\int_2^4 \int_3^5 \frac{x}{y} + \frac{y}{3} \, dx \, dy$.

5. Find the double integral $\iint_R x + 3y^2 \, dx \, dy$ over the rectangular region $0 \leq x \leq 2, 1 \leq y \leq 5$.

6. Find the double integral $\iint_R ye^{x+y^2} \, dx \, dy$ over the rectangular region $2 \leq x \leq 3, 0 \leq y \leq 2$.

7. Find the volume under the surface $z = 6x + 2y + 5$ and above the rectangular region $-1 \leq x \leq 1, 0 \leq y \leq 3$.

answers:

1. $\frac{1}{9}[(48+y)^{3/2} - (24+y)^{3/2}]$; 2. $\frac{e^{x+4} - e^{x-4}}{4}$; 3. $\frac{279}{8}$; 4. $8 \ln(2) + 4$; 5. 256; 6. $\frac{e^7 - e^6 - e^3 + e^2}{2}$; 7. 48