

1–6 Evaluate the iterated integral.

1. $\int_0^4 \int_0^{\sqrt{y}} xy^2 dx dy$

7–18 Evaluate the double integral.

8. $\iint_D \frac{y}{x^5 + 1} dA, \quad D = \{(x, y) \mid 0 \leq x \leq 1, 0 \leq y \leq x^2\}$

15. $\iint_D y^3 dA,$

D is the triangular region with vertices $(0, 2), (1, 1), (3, 2)$

19–28 Find the volume of the given solid.

19. Under the plane $x + 2y - z = 0$ and above the region bounded by $y = x$ and $y = x^4$

20. Under the surface $z = 2x + y^2$ and above the region bounded by $x = y^2$ and $x = y^3$

30. Find the approximate volume of the solid in the first octant that is bounded by the planes $y = x, z = 0,$ and $z = x$ and the cylinder $y = \cos x$. (Use a graphing device to estimate the points of intersection.)

45–50 Evaluate the integral by reversing the order of integration.

48. $\int_0^1 \int_x^1 e^{x/y} dy dx$

53–54 Use Property 11 to estimate the value of the integral.

53. $\iint_Q e^{-(x^2+y^2)^2} dA, \quad Q$ is the quarter-circle with center the origin and radius $\frac{1}{2}$ in the first quadrant