

- A. Let  $Q$  be the quadrilateral with vertices  $(1, 0)$ ,  $(4, 0)$ ,  $(0, 1)$ , and  $(0, 4)$ . Compute  $\iint_Q \frac{1}{x+y} dA$  using  $x = u - uv$ ,  $y = uv$ .
- B. Let  $E$  be the region enclosed by the ellipsoid  $(x/a)^2 + (y/b)^2 + (z/c)^2 = 1$ . Evaluate  $\iiint_E dV$ .
- C. Same  $E$  as in problem B. Evaluate  $\iiint_E x^2 dV$ .
- D. Compute the volume of the region bounded by the coordinate planes and the surface  $x + y + \sqrt{z} = 1$  using  $x = u$ ,  $y = v$ ,  $z = w^2$ .
- E. Let  $R$  be the square with vertices  $(0, 0)$ ,  $(1, 1)$ ,  $(2, 0)$ , and  $(1, -1)$ . Compute  $\iint_R xy dA$ .
- F. Let  $R$  be the region bounded by the ellipse  $x^2 - xy + y^2 = 2$ . Compute  $\iint_R (x^2 - xy + y^2) dA$  using  $x = u\sqrt{2} - v\sqrt{2/3}$ ,  $y = u\sqrt{2} + v\sqrt{2/3}$ .