

**Instructions:** Show all work. Use exact answers unless otherwise asked to round.

1. Evaluate the integral  $\int_0^1 \int_x^1 e^{x/y} dy dx$  by reversing the order of integration.

2. Set up and evaluate  $\iiint_Q x dV$  where  $Q$  is bounded by the cylinder  $y^2 + z^2 = 9$  and the planes  $x = 0, y = 3x, z = 0$  in the first octant. Use an appropriate coordinate system.

3. Set up and evaluate  $\iiint_Q x e^{x^2+y^2+z^2} dV$  where  $Q$  is the portion of the unit ball  $x^2 + y^2 + z^2 \leq 1$  that lies in the first octant. Use an appropriate coordinate system.