1. [EC 12.2.16] Compute $\iint_D 2xy\,dA$ where D is the triangular region with vertices $(0,0)$, $(1,2)$, and $(0,3)$.

2. [EC 12.2.26] Find the volume of the solid bounded by the cylinders $x^2+y^2=r^2$ and $y^2+z^2=r^2$.

3. [EC 12.2.{40,42}] Evaluate the following.

   (a) $\int_0^1 \int_{x^2}^1 x^3 \sin(y^3)\,dy\,dx$

   (b) $\int_0^8 \int_{y^{1/3}}^2 e^{x^4}\,dx\,dy$

4. [EC 12.3.6] Sketch the region whose area is given by the integral and evaluate the integral: $\int_0^{\pi/2} \int_0^{4\cos\theta} r\,dr\,d\theta$

5. [EC 12.3.18] Use polar coordinates to find the volume of the solid bounded by the paraboloid $z=1+2x^2+2y^2$ and the plane $z=7$ in the first octant (where x, y, and z are all at least 0).