Exercise 1. In this exercise, we will review the use of spherical coordinates.

Consider the outer peel of a the lower half of a watermelon, which is represented by the region between two spherical shells described by

$$4 \leqslant x^2+y^2+z^2 \leqslant 5.$$

Determine the mass of the peel, assuming a constant density given by $f(x,y,z) = \dfrac{1}{9\pi}$.

Exercise 2. In this exercise, we will apply Green's formula. Consider the vector field $\mathbf{F}(x,y) = (y^4 - 2y, -6x + 4y^3)$ and the rectangle whose opposite vertices are (0,0) and (6,4). Perform the following tasks:

1. Write down Green's formula.
2. Draw the curve in question and shade the region it encloses.
3. Apply Green's formula to evaluate the double integral over the bounded region.