

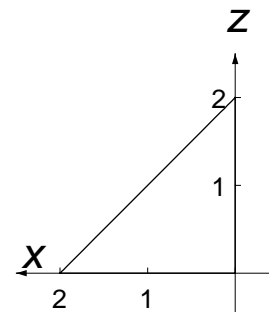
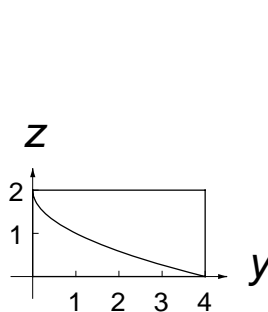
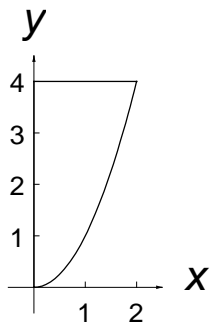
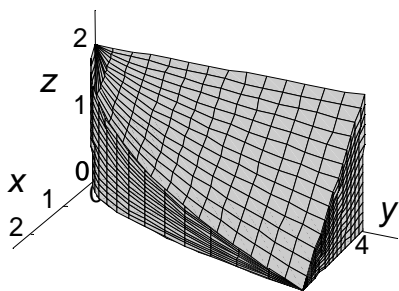
Practicing Limits for Triple Integrals

Name: _____

Follow the directions for each problem to practice setting up limits for triple integrals.

1) Write the integral for f over the solid bounded by the given surfaces using four orders of integration.

$$x=0, \quad x=2, \quad y=x^2, \quad y=4, \quad z=0, \quad z=2-x$$



$$\int \int \int f(x, y, z) \, dz \, dy \, dx$$

$$\int \int \int f(x, y, z) \, dz \, dx \, dy$$

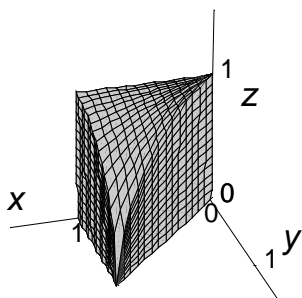
$$\int \int \int f(x, y, z) \, dy \, dz \, dx$$

$$\int \int \int f(x, y, z) \, dy \, dx \, dz$$

If you integrate with respect to x first, you need two triple integrals. Why? Try it if you have time.

2) Set up two integrals to find the volume of the solid in the first octant bounded by the surfaces $x = y$, $x = 1$, and $y^2 + z^2 = 1$. Use dz first for one integral and use dx first for the other integral.

(Using dy first requires two integrals. Try it, if interested.)



3) Set up a triple integral to find the volume of the solid bounded by the surfaces $x^2 + y^2 + z^2 = 6$ and $z = x^2 + y^2$. Set this up in rectangular coordinates. How would you set this up using a double integral? Later, try cylindrical and/or spherical coordinates.