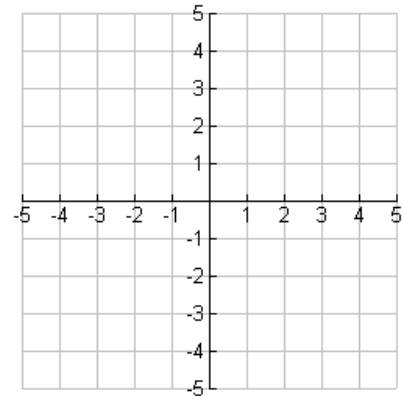


Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

### Solids of Known Cross Section Worksheet

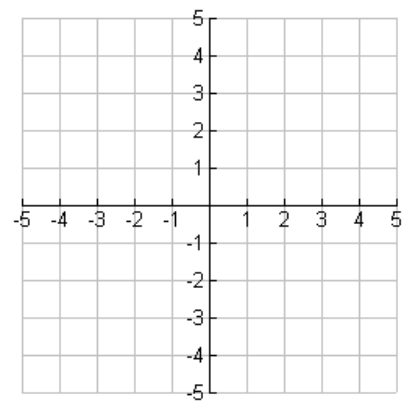
Sketch a graph of the base, draw a representative cross section, write a geometric formula for the area of the cross sectional face, set up a definite integral and find the volume.

1. Find the volume of the solid whose base is bounded by the circle defined by  $x^2 + y^2 = 4$  whose cross sections perpendicular to the x-axis are squares.

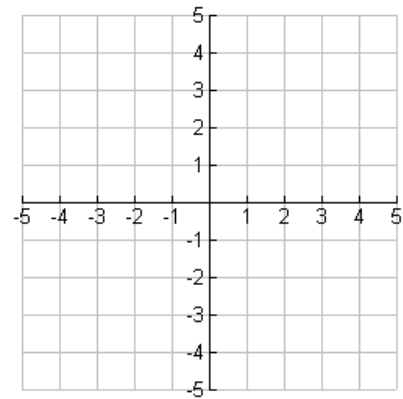


2. Find the volume of the solid whose base is bounded by the circle defined by  $x^2 + y^2 = 4$  whose cross sections perpendicular to the x-axis are equilateral triangles.

(The area of an equilateral triangle is given by  $A = \frac{\sqrt{3}s^2}{4}$  .

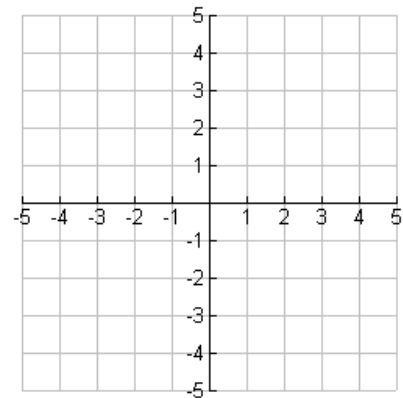


3. Find the volume of the solid whose base is bounded by the circle defined by  $x^2 + y^2 = 4$  whose cross sections perpendicular to the x-axis are semicircles.

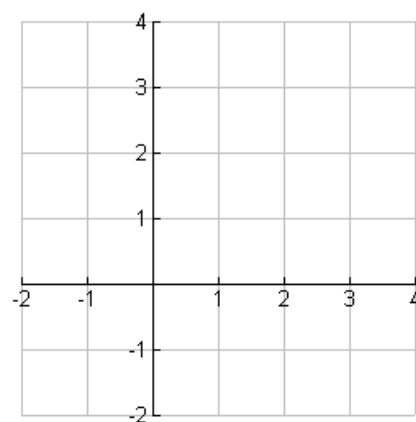


4. Find the volume of the solid whose base is bounded by the circle defined by  $x^2 + y^2 = 4$  whose cross sections perpendicular to the x-axis are isosceles right triangles.

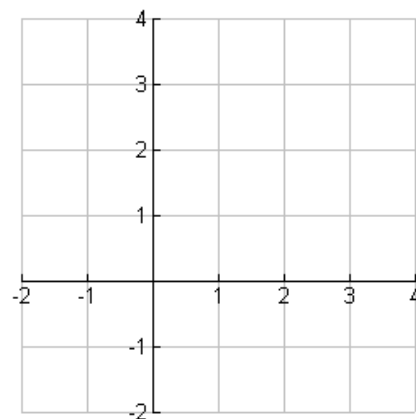
(The area of an isosceles right triangle is given by  $A = \frac{s^2}{4}$  .)



5. Find the volume of the solid whose base is bounded by the graphs of  $y = x + 1$  and  $y = x^2 - 1$  whose cross sections perpendicular to the x-axis are squares.

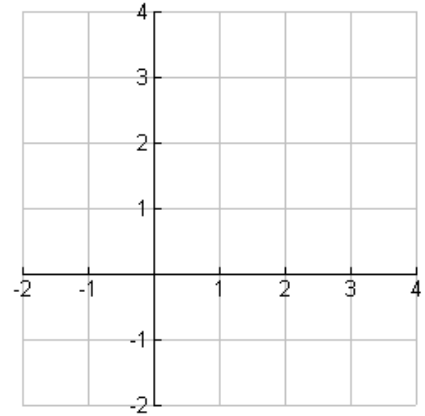


6. Find the volume of the solid whose base is bounded by the graphs of  $y = x + 1$  and  $y = x^2 - 1$  whose cross sections perpendicular to the x-axis are rectangles with a height of 1.



7. Find the volume of the solid whose base is bounded by the graphs of  $y = x + 1$  and  $y = x^2 - 1$  whose cross sections perpendicular to the x-axis are equilateral triangles.

(The area of an equilateral triangle is given by  $A = \frac{\sqrt{3}s^2}{4}$  .)



8. Find the volume of the solid whose base is bounded by the graphs of  $y = x^2$  and  $y = \ln(x + 1)$  whose cross sections perpendicular to the y-axis are squares.

