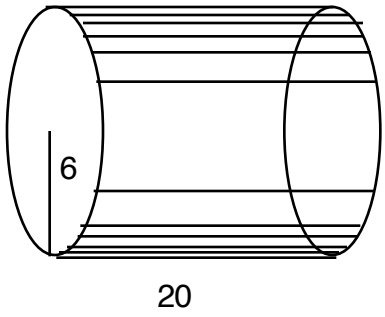
Name: _____

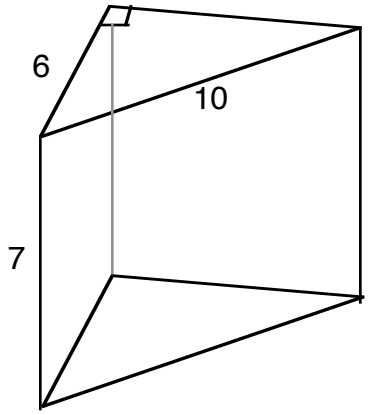
CLASSWORK 120

Find the volume of each figure.

1.

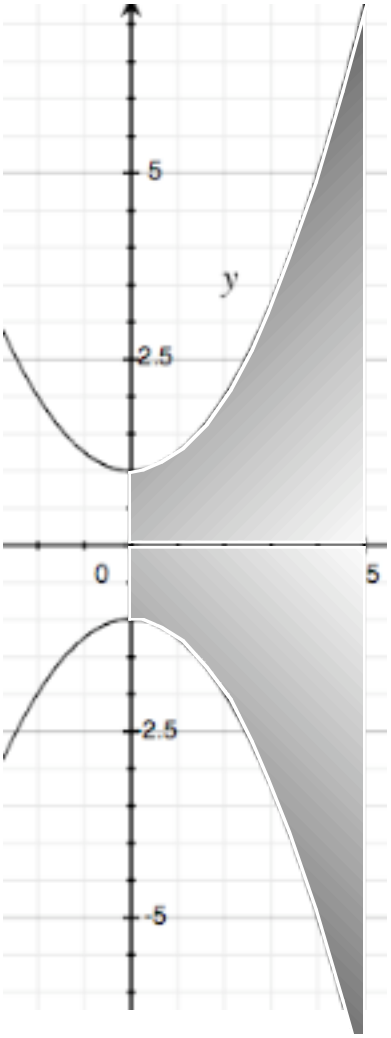


2.



3. The curve $y = x^2 + 1$ is rotated around the x- axis. Find the volume of the figure created from 0 to 4.

a) What shape is the **cross section**? Write a general formula for the area of that shape.



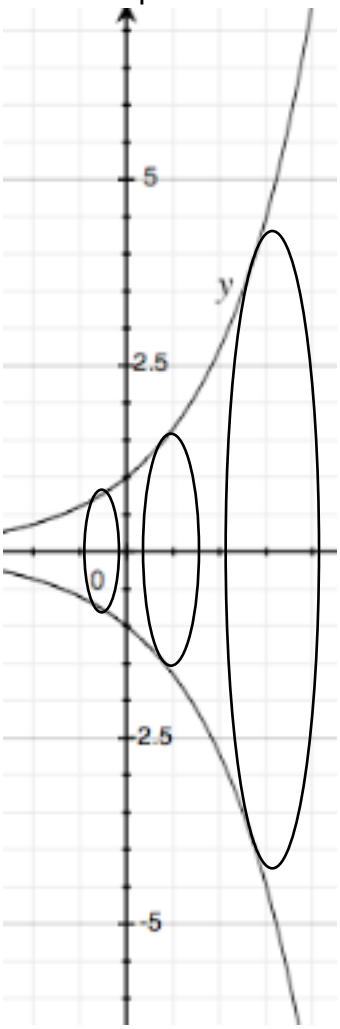
b) Write an integral showing that you would take each cross-sectional area, multiply it by it's "height", and add all of them together.

c) Express the integral in terms of x (only).

d) Evaluate the integral to find the volume.

4. The curve $y = e^x$ is rotated around the x-axis. Find the volume of the figure created from $x = 0$ to $x = \ln 12$.

a) What shape is the **cross section**? Write a general formula for the area of that shape.

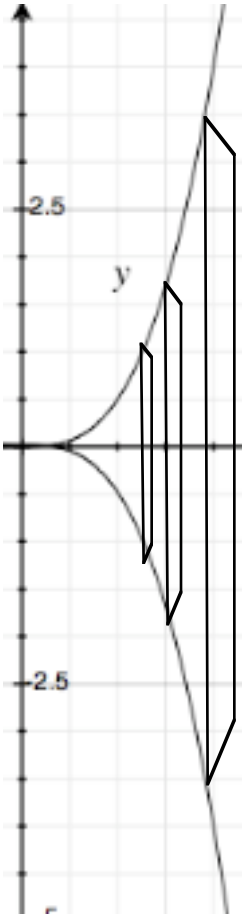


b) Write an integral showing that you would take each cross-sectional area, multiply it by it's "height", and add all of them together.

c) Express the integral in terms of x (only).

d) Evaluate the integral to find the volume.

5. Lily creates a figure by stacking squares between the curves $y = 1/2x^3$ and $y = -1/2x^3$. Find the volume of the figure between $x = 0$ and $x = 2$.



6. Find the volume created when the curve $y = \sqrt{x - 1}$ is rotated around the x-axis from 1 to 17.

7. The base of a solid is created by the curve $y = 9 - x^2$ between x = -3 and x = 3. The height of the solid is defined as the y value. Find the volume of the figure.