

Math 1432

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Office Hours:

Mondays 1-2pm,
Fridays noon-1pm
(also available by appointment)

Class webpage:

<http://www.math.uh.edu/~bekki/Math1432.html>

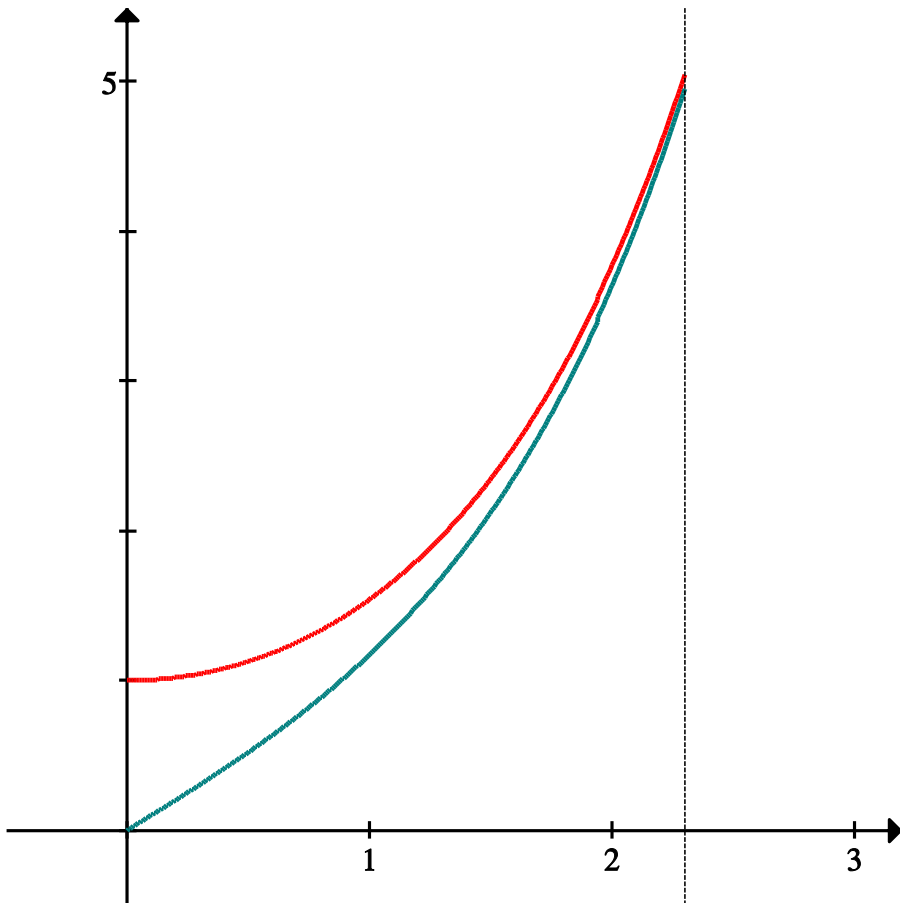
Popper 03

1. Which of the following would give the volume of the region bounded by $y = 3x - x^2$ and $y = 0$ rotated about the x-axis?
2. Which of the following would represent the length of the inner radius for the volume of the region bounded by $y = 3x - x^2$ and $y = x$ rotated about the x-axis?

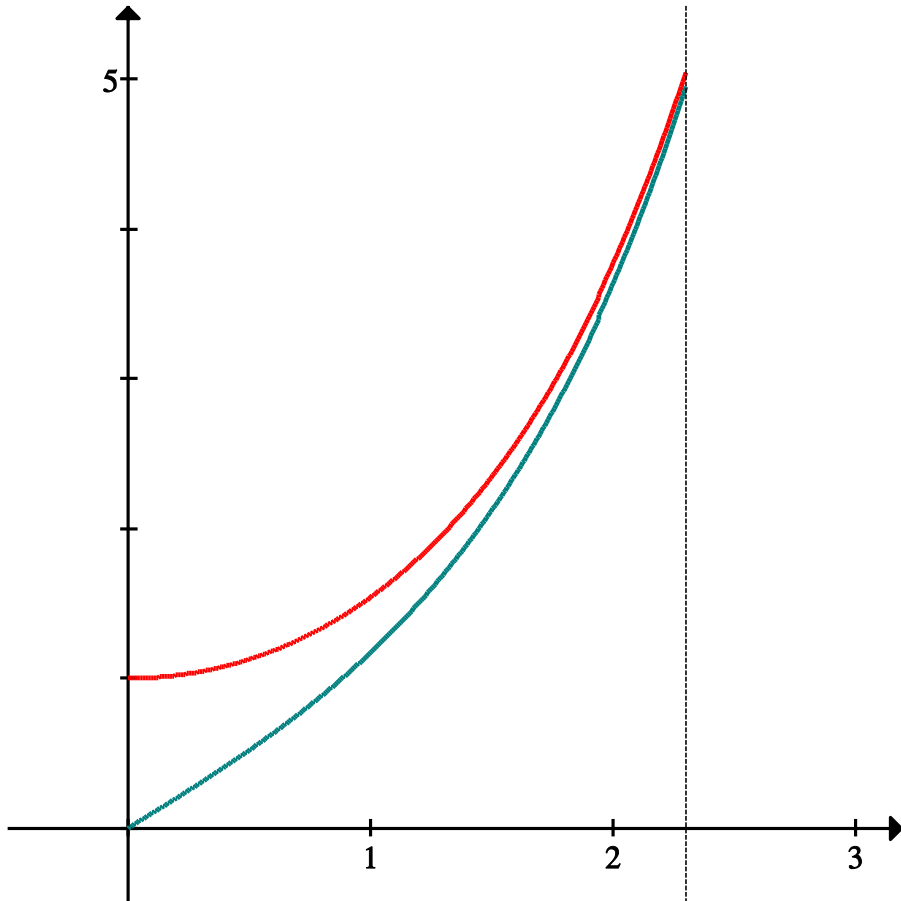
Mixed examples:

The region bounded by the graph of $f(x) = \frac{1}{\sqrt{1+x}}$ and the x – axis for $0 \leq x \leq 8$ is revolved about the x – axis. Find the volume of the solid that is generated.

Find the area bounded by the graphs of $f(x) = \sinh(x)$ and $f(x) = \cosh(x)$ for $0 \leq x \leq \ln 10$



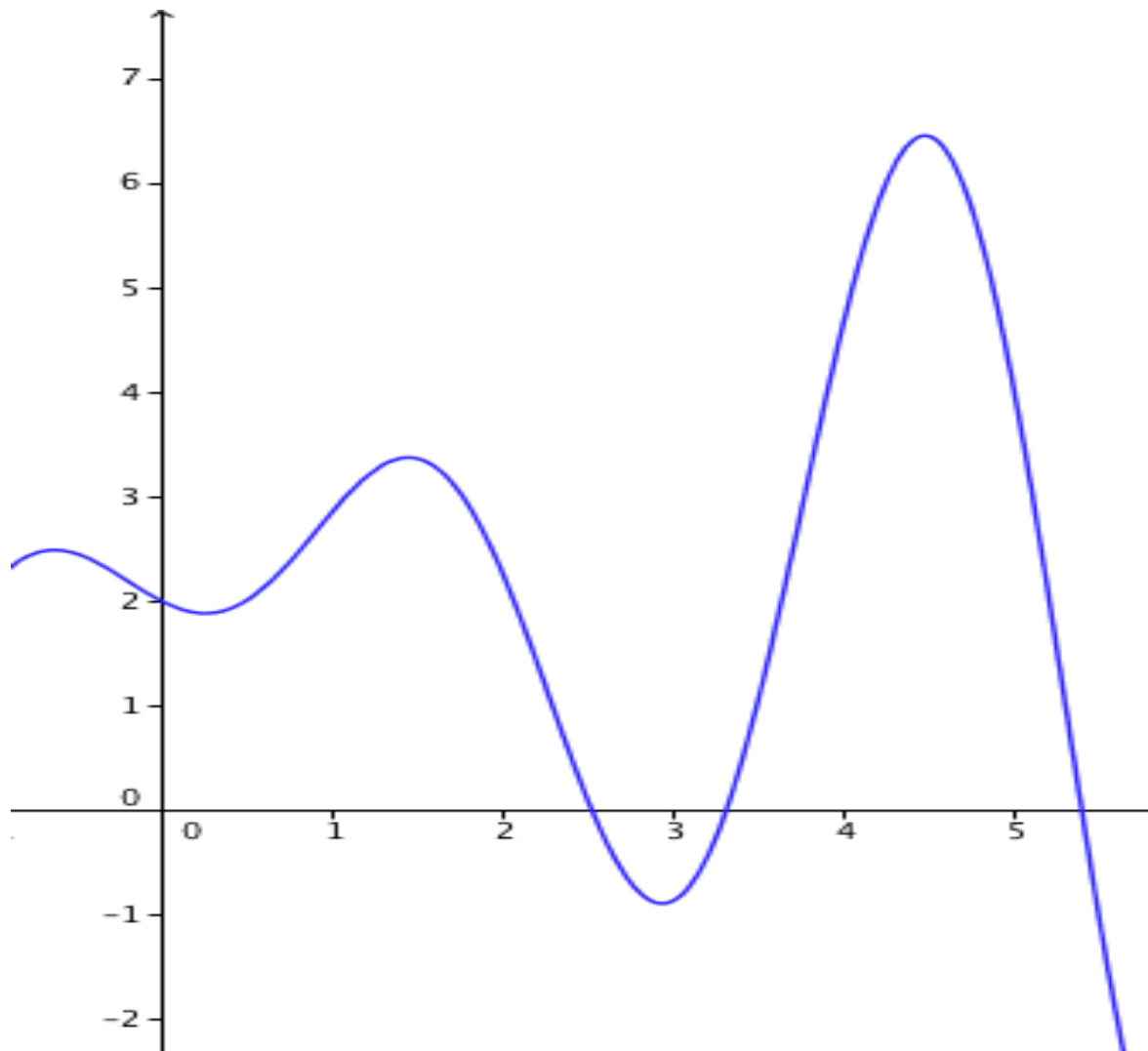
Find the volume when the region bounded by the graphs of $f(x) = \sinh(x)$ and $f(x) = \cosh(x)$ is revolved around the x – axis for $0 \leq x \leq \ln 10$



The base of a solid is the region enclosed by $y = e^x$, the x-axis, the y-axis and the line $x = \ln 3$. Cross sections perpendicular to the x-axis are squares. Write an integral that represents the volume of the solid.

Find the volume of the solid formed by rotating the region bounded by the graph of $y = \sqrt{x} + 1$, the y -axis, and the line $y = 3$ about the line $y = 5$.

Arc Length



Formula:

$$L = \int_C ds$$

where $ds = \sqrt{1 + (f'(x))^2} dx$ for the curve C traced by $y = f(x)$, $a \leq x \leq b$

or $ds = \sqrt{1 + (g'(y))^2} dy$ for the curve C traced by $x = g(y)$, $c \leq y \leq d$

Examples:

Give a formula for the length of the “curve” given by the graph of $f(x) = 2x + 1$ for $1 \leq x \leq 3$.

Give a formula for the length of the curve given by the graph of $f(x) = x^2$ for $-1 \leq x \leq 1$.

Find the length of the curve $x = \frac{2}{3}(y-1)^{3/2}$ for $1 \leq y \leq 4$