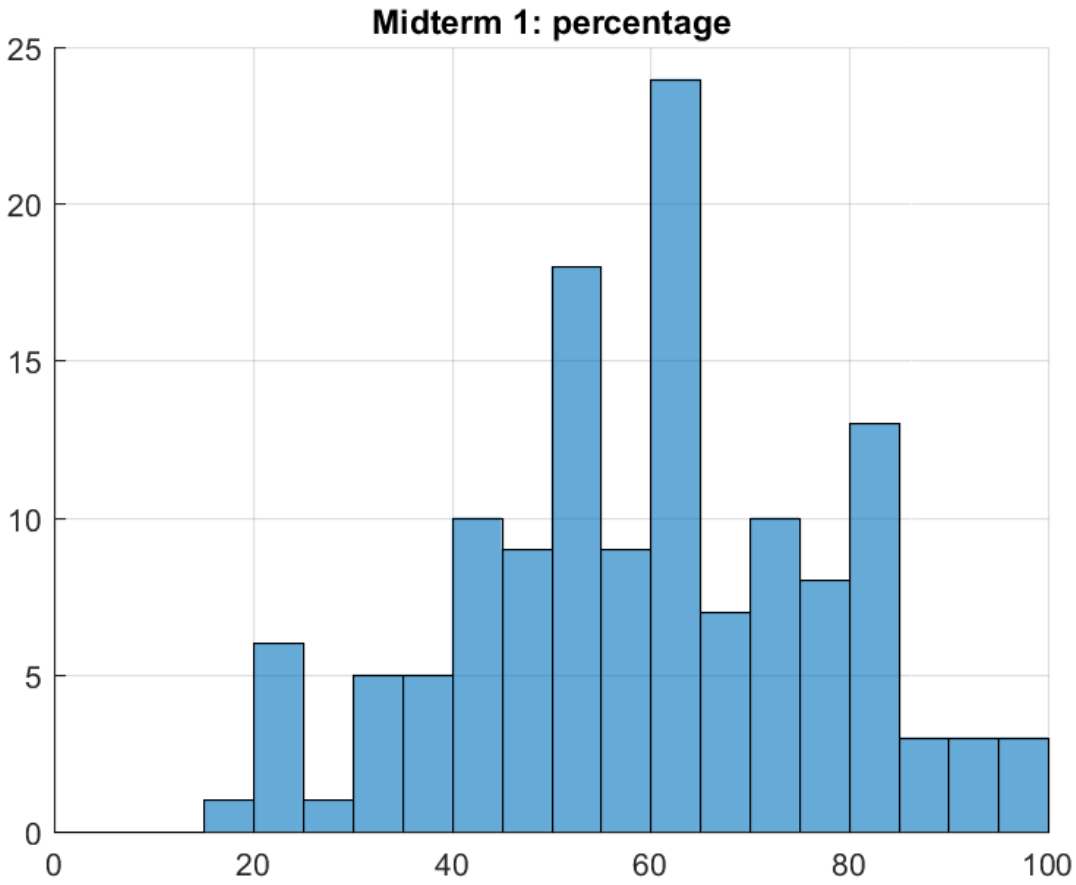
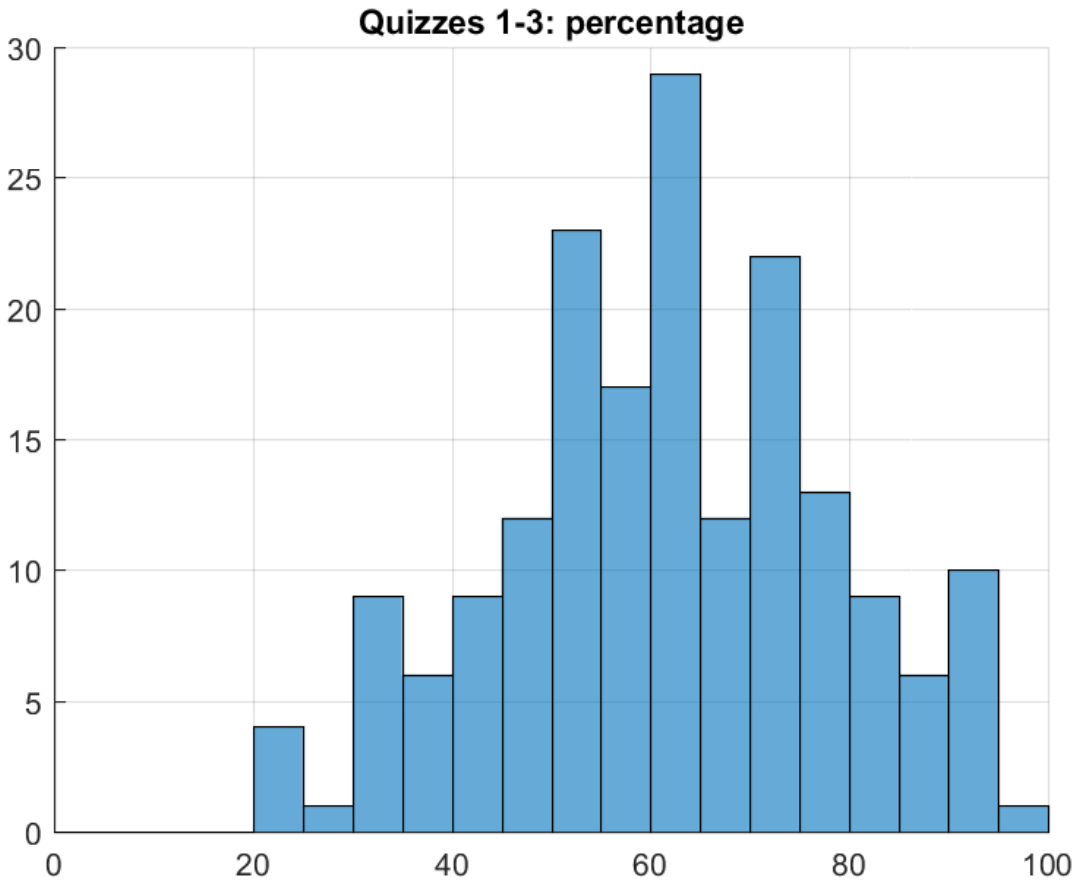
MAT 126.01, Prof. Bishop, Tuesday, Sept. 29, 2020
Discuss Midterm 1
Section 2.2, Volumes by Slicing


Midterm 1: percentage
25
20
15
10
5
0
0
20
40
60
80
100


Quizzes 1-3: percentage
30
25
20
15
10
5
0
0
20
40
60
80
100

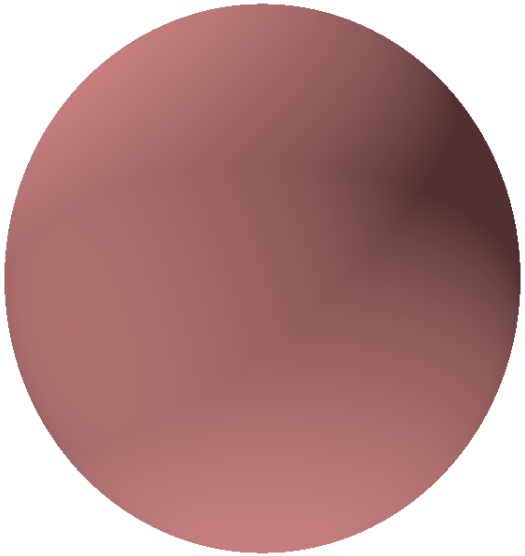
Precalculus volume formulas:

Sphere $V = \frac{4}{3}\pi r^3$

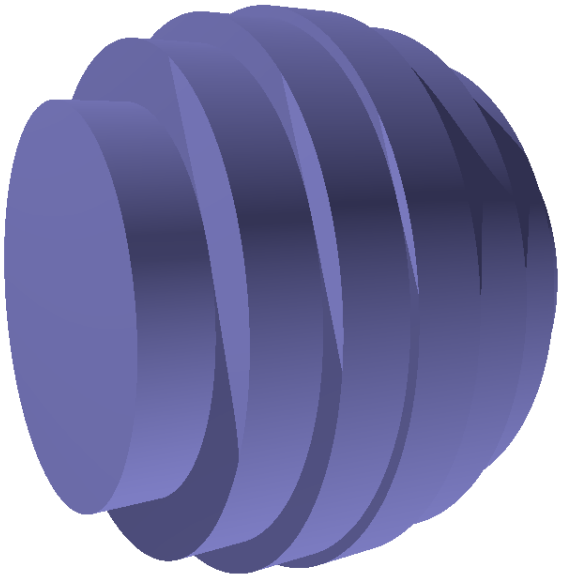
Cone $V = \frac{1}{3}\pi r^2 h$

Pyramid $\frac{1}{3}Ah$

Derive volume of sphere $V = \frac{4}{3}\pi r^3$



Derive volume of sphere $V = \frac{4}{3}\pi r^3$



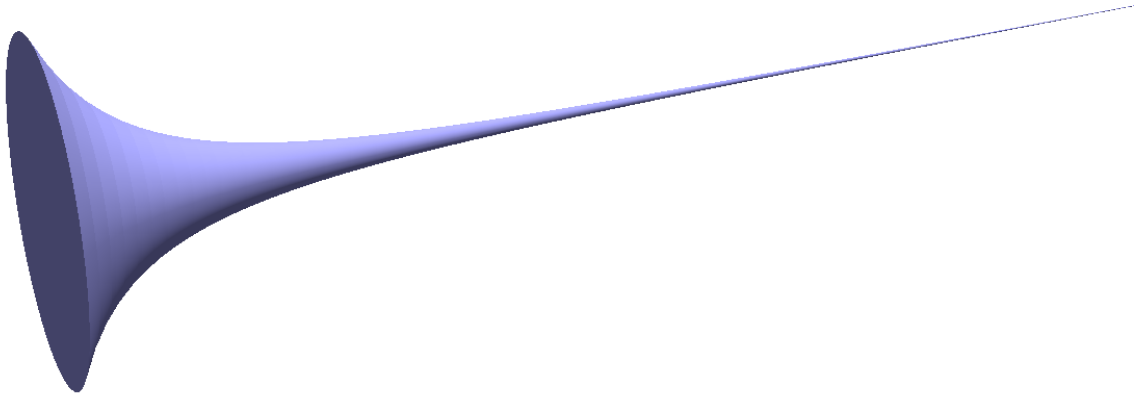
Derive volume of cone $V = \frac{1}{3}\pi r^2 h$

If the graph of $f \geq 0$ on $[a, b]$ is revolved around the x-axis, the volume of the solid obtained is

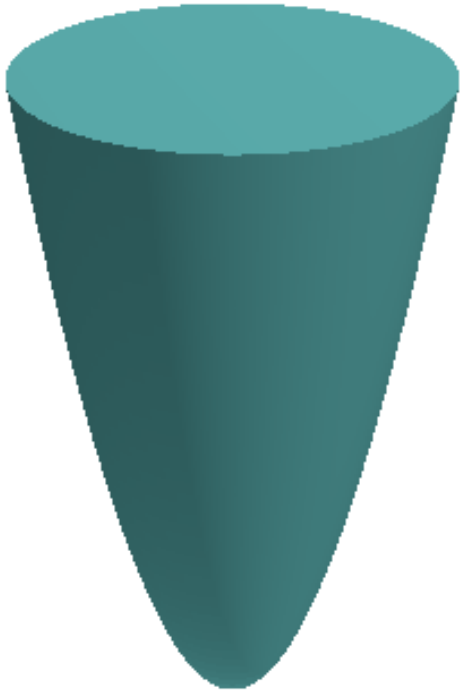
$$\pi \int_a^b f(x)^2 dx.$$

Suppose $1/x$ on $[1, 2]$ is revolved around x-axis. What is the resulting volume?

Suppose $1/x$ on $[1, \infty)$ is revolved around x-axis. What is the resulting volume?



Suppose x^2 on $[0, 2]$ is revolved around y-axis. What is the resulting volume?



Washer method

If $f \geq g \geq 0$ $[a, b]$ and the region

$$\{(x, y) : a \leq x \leq b, g(x) \leq y \leq f(x)\}$$

iss revolved around the x-axis, the volume of the solid obtained is

$$\pi \int_a^b (f(x)^2 - g(x)^2) dx.$$

Suppose a cylinder of radius $1/2$ along the x-axis is removed from a sphere of radius 1 centered at the origin. How much volume remains?