

Math 1552, Integral Calculus

Final Exam Study Guide

In preparing for the final exam, you should review the following problems from our past study guides, and the additional problems on volumes listed below.

PLEASE NOTE: A few topics have been left off of the list of topics to study (such as L'Hopital's rule). That means that you will not see a question on the exam that SPECIFICALLY asks you to use that topic; however, math builds, and knowledge of that topic may be required in order to solve more complex problems.

Problem List from Test 1 Review Sheet

Concept Review

1. all parts except (a), and all of the formulas in 2.

Recitation Worksheet Problems

1. a, b, c, d, k, l, m, n, o, p, q, r, s

Problems 7, 9, 10, 12, 16, 18, 22, and 23

Additional Review Problems

24. a, b, c, d, f, i

Problems 25, 30, and 31

Problem List from Test 2 Review Sheet

1. a, b, c, d, g, h, i, j, k, l

2. a, c, d, e, f, m, n, o, p, v, w, x, y, z

3. a, b, c, e, f, g, h, i, l

Problems 5 and 9

10. c, d, e, f, j, k, l, m, n

Problems 11, 16, and 17

Problem List from Test 3 Review Sheet

Problems 1 and 2

3. a, b, d, e, f, g, i, j, k, l

5. a, b, c

Problems 6, 7, 8, 9, 12, 13, 14, 15, 16

17. all parts except (k)

18. b, g, h, i, l

Problems 19 and 20

22. d, e, g, h

Problem 23

Additional Practice Problems on Volumes

1. Find the volume of the solid generated by revolving the region bounded by the curve $y = \sin(x)$, the x -axis, and the lines $x = 0$, $x = \pi/2$ about the y -axis.
2. Find the volume of the solid generated when the region bounded by the curves $y = 4 - x^2$ and $y = 2 - x$ is revolved about the x -axis.
3. Find the volume of the solid generated when the region bounded by the curves $y = x^2 - 4$ and $y = 2x - x^2$ is revolved about the line (a) $y = -4$ and (b) $x = 2$.
4. Use the method of cylindrical shells to find the volume of the solid generated when the region bounded by the curve $y = \sqrt{x}$, the x -axis, and the line $x = 9$ is revolved about the x -axis.

Answers to Additional Problems

1. 2π
2. $\frac{108\pi}{5}$ cubic units
3. (a) 45π cubic units, (b) 27π cubic units
4. $\frac{81\pi}{2}$ cubic units