

Math 1B

Midterm 2 Area & Volume Review Answers

1. All answers in the tables are rounded to 2 decimal places.
2. For the midterm, you may need to find exact answers (using fractions, radicals, logarithms, trigonometry, e and/or π as needed).
3. NOTE: We have not yet covered how to manually integrate to get the answers in yellow below.

Work together as much as possible to discuss possible errors. (If everyone independently gets the same incorrect answer, let me know immediately.)

		VOLUME OF SOLID IF REGION IS REVOLVED AROUND					
REGION	AREA	$x = -3$	$x = 5$	$y = -1$	$y = 10$		
P	4.50	155.51	70.69	237.50	73.51		
Q	10.67	201.06	335.10	281.49	455.74		
REGION	AREA	$x = 0$	$x = -2$	$x = 3$	$y = -1$	$y = 2$	$y = 3$
R	1.50	3.14	21.99	25.13	12.57	15.71	25.13
S	4.50		73.51	67.86	42.41	42.41	70.69
T	0.39	0.59	5.45	6.69	6.43	0.86	3.28
U	3.44	20.07	63.26	44.71	46.73	18.05	39.64

VOLUME IF REGION IS BASE OF SOLID AND CROSS SECTIONS PERPENDICULAR TO X-AXIS ARE			
REGION	SQUARES	SEMICIRCLES	EQUILATERAL TRIANGLES
P	8.10	3.18	3.51
Q	34.13	13.40	14.78
R	3.00	1.18	1.30
T	0.27	0.11	0.12

Midterm 2 Non-Volume Review Answers

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|---|--|--|--|
| [1] 24 | [2] $\sqrt{7} - 1$ | [3] $\frac{33}{16}$ | [4] $\frac{15}{2}$ |
| [5] [a] $\int_2^3 2\pi x^3 \sqrt{1+9x^4} dx$ | [b] $\int_8^{27} \frac{2}{3} \pi y^{\frac{1}{3}} \sqrt{9y^{\frac{4}{3}} + 1} dy$ | [c] $\int_2^3 2\pi x \sqrt{1+9x^4} dx$ | [d] $\int_8^{27} \frac{2}{3} \pi y^{\frac{1}{3}} \sqrt{9y^{\frac{4}{3}} + 1} dy$ |
| [e] [a] = [b] = $\frac{\pi}{27} (730\sqrt{730} - 145\sqrt{145})$ | [6] $\pi r \sqrt{r^2 + h^2}$ | [7] $\frac{4600}{3} \text{ ft-lb}$ | |
| [8] $y \geq \cos^{-1} x, y \leq \pi, x \leq 1$ revolved around $y = -1$ | [9] $y \geq -x, y \leq \sqrt{x}$ on $[1, 4]$ revolved around $y = 3$ | | |
| [10] (1.5, 0) | [11] [a][i] 133826.8205 ft-lb | [ii] 79459.67467 ft-lb | [b] 54367.14583 ft-lb |
| [12] [a] 1960.3538161 lb | [b] 1021.776908 lb | [c] 644.8 lb | [d] 603.2 lb |