

Math 2B 44360
Winter 2018
Midterm 1
Wed Jan 31 2018
9.00am

Student's Name (Print): _____

Student's ID: _____

Discussion Section Code: _____

Print your name and student ID on the top of this page.

This exam contains 5 pages (including this cover page) and 7 problems. You may *not* use your books, notes, or any calculator in this exam. Do not write in the grading table below.

The following rules apply to the answers you provide in this exam:

- **Organize your work**, in a neat and coherent way.
- **Unsupported answers will not receive full credit.** Calculation or verbal explanation is expected.
- **If you need more space, use the back of the pages;** clearly indicate when you have done this.
- **Box your final answer** for full credit.

Question	Points	Score
1	15	
2	15	
3	5	
4	5	
5	5	
6	5	
7	10	
Total:	60	

- [illegible]

2. Evaluate the following:

(a) (5 points)

$$\int (2 + \tan^2 \theta) d\theta \quad [\text{Hint: } \frac{d}{d\theta} \tan \theta = \frac{1}{\cos^2 \theta}.]$$

(b) (5 points)

$$\int x^3 \sqrt{x^2 + 1} dx$$

(c) (5 points)

$$\int \frac{\cos(\ln t)}{t} dt$$

3. (5 points) Given that $\int_0^9 f(x) dx = 4$, evaluate $\int_0^3 xf(x^2) dx$.

4. (5 points) Evaluate

$$\frac{d}{dx} \int_1^{e^x} \ln t dt.$$

5. (5 points) A particle moves along a line with velocity $v(t) = 3t - 5$ at time t . Find the displacement of the object in the time interval $[0, 3]$.

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6. (5 points) Compute the area of the region enclosed by $y = \sin x$, $y = x$, $x = \pi/2$ and $x = \pi$.
7. (a) (5 points) Find the volume of the solid obtained by rotating the region bounded by the curves $2x = y^2$, $x = 0$ and $y = 4$ about the y -axis.
- (b) (5 points) Set up an integral to find the volume of the solid obtained by rotating the region bounded by $y = x^3$, $y = 0$ and $x = 1$ about the axis $x = 2$. Do not evaluate the integral.