

Emory University
Final Exam Review: Integration
MA-111 Calculus I
Date: December 10, 2025
Instructor: Mitchell Scott

Student ID _____

Name: _____

Please read the following instructions carefully.

- **This is simply a review session!** This question booklet contains 3 questions, 6 pages (including the cover) for the total of 34 points/marks. Check to see if any pages are missing. **DO NOT** scribble or do rough work or make any stray marks on it. Use separate sheet for rough work.
- This is meant to represent what an actual exam might look like. **Read the instructions for individual questions carefully** before answering the questions.
- This was not overseen by the coordinator nor other instructors.

Question	Points	Score
1	12	
2	12	
3	10	
Total:	34	

1. Solve the following definite integrals:

(a) (4 points)

$$\int_0^4 (-2.125x + 21) \, dx$$

(b) (4 points)

$$\int_0^{\ln(1+\pi)} e^x \cos(1 - e^x) \, dx$$

(c) (4 points)

$$\int_{-\pi}^{\frac{\pi}{2}} \cos(x) \cos(\sin(x)) \, dx$$

2. Solve the following indefinite integrals:

(a) (4 points)

$$\int \frac{\arcsin(x)}{\sqrt{1-x^2}} \, dx$$

(b) (4 points)

$$\int \frac{\cos(\sqrt{x})}{\sqrt{x}} \, dx$$

(c) (4 points)

$$\int \left(x \cos(x^2 + 1) + \frac{x}{x^2 + 1} \right) \, dx$$

3. Solve the following integrals:

(a) (4 points)

$$\int \left(x \cos (x^2 + 1) + \frac{1}{x^2 + 1} \right) dx$$

(b) (6 points) Using the trigonometric identity $\cos^2(x) = \frac{1}{2}(\cos(2x) + 1)$, solve

$$\int_0^a \sqrt{a^2 - x^2} \, dx$$