

Math 296: Exam 2
Summer Session II – 2016
07/28/2016
80 Minutes

Name: _____

Write your name on the appropriate line on the exam cover sheet. This exam contains 10 pages (including this cover page) and 9 questions. Check that you have every page of the exam. Answer the questions in the spaces provided on the question sheets. Be sure to answer every part of each question and show all your work. If you run out of room for an answer, continue on the back of the page — being sure to indicate the problem number.

| Question | Points | Score |
|----------|--------|-------|
| 1 | 5 | |
| 2 | 5 | |
| 3 | 5 | |
| 4 | 5 | |
| 5 | 5 | |
| 6 | 5 | |
| 7 | 5 | |
| 8 | 5 | |
| 9 | 5 | |
| Total: | 45 | |

1. (5 points) Integrate the following:

$$\int \frac{1 + \sqrt[3]{x}}{\sqrt[3]{x} - 1} dx$$

2. (5 points) A table of integration gives the following:

$$\int \frac{dx}{x\sqrt{x^n - a^n}} = \frac{2}{n\sqrt{a^n}} \cos^{-1} \sqrt{\frac{a^n}{x^n}}$$

Use this to integrate the following:

$$\int \frac{\ln 2}{\sqrt{2^{5x} - 32}} dx$$

3. (5 points) Integrate the following:

$$\int x^3 e^{x^2} dx$$

$$\int \arctan x dx$$

4. (5 points) Integrate the following:

$$\int e^{2x} \sin 3x \, dx$$

5. (5 points) Integrate the following:

$$\int x^4 e^{2x} dx$$

6. (5 points) Integrate the following:

$$\int \sec^3 x \tan^5 x \, dx$$

7. (5 points) Integrate the following:

$$\int \frac{dx}{x^{2017} - x}$$

8. (5 points) Integrate the following:

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

9. (5 points) Integrate the following:

$$\int \frac{\sqrt{x^2 - 4}}{x} dx$$