Math 76 Assessment 21 §7.3-7.4 Polar Coordinates

Things to remember:

1. The problem to complete is shown below. Write your name and solution on the next page where instructed.

2. Please make sure your full name is written neatly in the box.

3. Your score will be determined by **Mechanics** (2 points) and by **Content** (3 points).

4. The following rubric will be used for **Mechanics**:

Clear neat work, steps in order and easily followed, proper use of notation	2
Mostly clear work; minor errors in notation or skipped steps	1.5
Steps/handwriting hard to follow/read; major errors in notation	1
No discernible or relevant work, or work impossible to read/follow	0

5. You are not allowed to consult outside sources, including notes, books, the internet, or other people, while taking this assessment. Calculators are allowed only for basic numerical or scientific computations, not for graphing or algebra.

6. If you need more room, you may finish on a plain piece of paper or blank document. If you do all your work on separate sheets, please **copy the problem** and make sure to write **Version C** at the top of the first page.

7. When you are finished, create a legible, well-lit **.pdf file** of your work and upload it to Assessment 21 on Gradescope. Please follow the directions to **assign the page(s)** of your submission that contain your work for the question. More info about submitting to Gradescope:

   `http://bit.ly/gradescope-help`

Follow the directions on the previous page. Find an integral for the area enclosed by the given polar curve.

Your solution should include:

- (1 point) Explanation of your strategy, including a statement of any formulas used;
- (1 point) Correct computation of the limits of integration;
- (1 point) Correct answer (0 if no explanation).

Assessment 21 Full Name: Tyler Gillette

Version C

Follow the directions on the previous page. Assume n is an unknown whole number greater than or equal to 2. Set up an integral for the area enclosed by one leaf of the rose

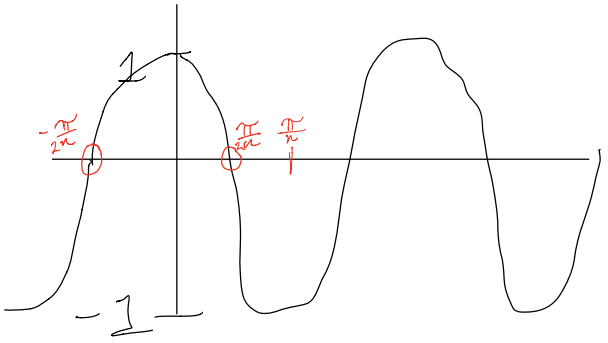
$$r = 7\cos(n\theta).$$

Your answer should be expressed in terms of n. *You do not have to evaluate the integral.*

$r = 7\cos(n\theta)$

$a = -\frac{\pi}{2n}$

$b = \frac{\pi}{2n}$



based on the graph of cos we want half of the n value so that we get a full leaf. So based on that we would have Bands $-\frac{\pi}{2n}, \frac{\pi}{2n}$

$$\text{Area} = \frac{1}{2}\int_a^b r^2 d\theta$$

$$\text{Area} = \frac{1}{2}\int_{-\frac{\pi}{2n}}^{\frac{\pi}{2n}} (7\cos(n\theta))^2 d\theta \quad \checkmark$$