MATH 141 Calculus 2
Fall 2015
Review lecture planning (updated December 6)

This collaborative document will be updated frequently (December 3 updates 10:45pm, December 1 updates, November 30 updates). **Please check MyCourses for the latest version** (the course webpage may be a little late).

We finished the syllabus on Monday November 30. This leaves us with three lectures for review. Many of you sent in suggestions, and there were more topics than we could cover in the three lectures, but I think everyone who reached me before 11:30am Sunday will get at least one of their suggestions covered. Schedule so far:

Wednesday 2 December:

- Summary of convergence tests and when to use each one (now posted on MyCourses and the course webpage.)
- Example: Compute the sum of the series

$$\sum_{n=1}^{\infty} \left(\cos \frac{1}{n^2} - \cos \frac{1}{(n+1)^2} \right),$$

  or explain why it diverges.
- Example: Determine whether the following series converges or diverges.

$$\sum_{n=1}^{\infty} \frac{n^2+1}{5^n}.$$

Friday 4 December: all now posted on MyCourses and the course webpage

- Summary of when to use each integration technique
- Example: Compute the following indefinite integral:

$$\int \frac{x^3+3x^2+18}{x(x^2+3)}\,dx.$$

- Example: Compute the following indefinite integral:

$$\int 20(x\sec(x^5))^4\,dx.$$

- Example: Let C be the parametric curve

$$x = t^3, \quad y = t^2, \quad 0 \le t \le 1.$$

  Find the area of the surface obtained by rotating the curve about the x-axis.

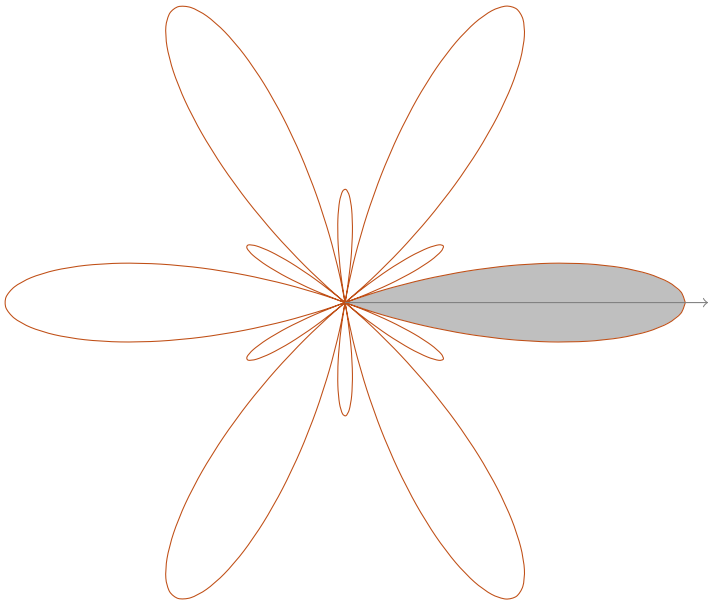
Monday 7 December: hopefully posted on MyCourses and the course webpage on Monday night; it might be late due to UQAM student strike.

- Common errors on exams (as posted on the information about the final).

- Trigonometric identities and values, exponential / logarithmic identities and values.
- Example: The diagram shows the polar curve

$$r = 1 + 2\cos(6\theta).$$

Find the shaded area. **Simplify your answer as much as possible.**



- Example: Compute the following indefinite integral:

$$\int \sqrt{18x - x^2}\, dx.$$

- Example: Determine if the following series are absolutely convergent, conditionally convergent, or divergent.

$$\sum_{i=1}^{\infty} (-1)^n \frac{\sqrt{n}}{n+3};$$

$$\sum_{i=1}^{\infty} (-1)^n \frac{\ln(e^n)}{n^8 \cos(n\pi)}.$$