

## Written Homework 6

Math 126

Solve each of the following problems. Write your solutions clearly and neatly on separate paper, explaining your reasoning with complete sentences. Submit your work either in class or in the homework mailbox (RMS level 3, near the fireplace) by 4:00pm on **Friday, September 27**.

- Write an integral that represents length of the graph of  $y = \frac{x^4}{8} + \frac{1}{4x^2}$  from  $x = 1$  to  $x = 2$ .
  - Show that  $1 + \left(\frac{1}{2}x^3 - \frac{1}{2}x^{-3}\right)^2 = \left(\frac{1}{2}x^3 + \frac{1}{2}x^{-3}\right)^2$
  - Use part (b) to evaluate the integral you wrote in part (a).
- Draw a careful sketch of the region bounded by the graph  $y = x^2 + 1$  and  $y = -x^2 + 2x + 5$ . What is the volume of the solid formed by rotating this region about the  $x$ -axis?