

MATH 253/Sample Midterm. March 2007

*Part II: Long Answer*

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*Closed Book. No Calculators.*

Name:.....

Student Number:.....

Your marked exam will be returned to you in class within a week. If you prefer not to pick your exam in class, please sign below:

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1. Discuss the convergence/divergence of  $\int_2^{\infty} \frac{1}{x^2 - x} dx$ . Justify your answer. (You need **NOT** take the integral).

2. Find  $\int \frac{x+1}{x^2+4x+5} dx$ .

3. Find the volume of the solid generated by revolving the region enclosed by  $y = e^{2x}$ ,  $x = 1$ , the  $x$ -axis and the  $y$ -axis about the  $y$ -axis.

4. Find the arclength of  $y = \ln(\sec(x))$ ;  $0 \leq x \leq \pi/4$ .