MATH 222 — FIRST MIDTERM

February 15, 2002, 9:55am–10:45am

Your Name:

Your TA: (circle one)

Chris Alfeld **Graham Jonaitis** **Andy Raich**

Joshua Rushton **Fernando Miranda**

Score

1: 2: 3: 4:

Total:

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1. (a) Find the partial fraction decomposition of $\dfrac{x^2}{x^2-3x+2}$.

(b) Find the partial fraction decomposition of $\dfrac{x^2-3x+2}{(x^2+1)(x-4)^3}$. In this problem (b) you do not have to find the unknown coefficients "A,B, $\cdots$"

2. Compute $\int_1^2 (6x^2 - 2x)\ln(x)\ dx$.

   Then compute $\int_1^2 (6x^2 - 2x)\ln(x^2)\ dx$.

3. Here are two improper integrals. Find out if they converge. If they do, find their value.

   (a) $\displaystyle\int_0^\infty \frac{x}{4+x^4}\,dx$

   (b) $\displaystyle\int_0^\infty \frac{x^3}{4+x^4}\,dx$

4. Compute $\int \sqrt{4+2x^2}\,dx$