Math 222 Quiz 2

Feb 2, 2011

Your Name: *Your Section:*

Instructions: You have 20 minutes to solve the following problems and the total score is 10 points. There are bonus problems on the back.

1. $\int \frac{x^4}{x^2-1}\mathrm{d}x$ (5 pts)
2. $\int_{\sqrt{3}}^{+\infty} \frac{x^2-x+1}{(x-1)^2(x^2+1)}\mathrm{d}x$ (2 pts)
3. Determine whether the improper integral converges or diverges: $\int_1^{\infty} \frac{dx}{2x^3+\sin x}$ (3 pts)

Bonus 1: For which α's do the intergrals converge: $\int_1^\infty \frac{1}{x^\alpha}dx$, $\int_0^1 \frac{1}{x^\alpha}dx$, $\int_0^\infty \frac{1}{x^\alpha}dx$? (3 pts)
Bonus 2: Converges or diverges $\int_0^{+\infty} x^5 e^{-x^2}dx$? (2 pts)