Sample for Midterm 2

Math 1220, Calculus II

1

Compute the following integrals:

$$\int 2^{4^x+2x}\,dx \qquad \int \frac{\ln(\ln x)}{x}\,dx$$

$$\int e^x\,\sin x\,dx \qquad \int \ln(x^2+1)\,dx$$

$$\int \frac{(1-x)^2}{\sqrt{2x-x^2}}\,dx \qquad \int \frac{1}{x\,\sqrt{2x+1}}\,dx$$

$$\int \frac{2x^2+x+1}{x^2\,(x^2+x+1)}\,dx$$

2

Compute the following limits:

$$\lim_{x\to 0}\frac{\displaystyle\int_0^x t\,dt}{\displaystyle\int_0^x \sin t\,dt} \qquad \lim_{x\to 1} x^{\frac{1}{1-x}} \qquad \lim_{x\to\infty}\left(\,e^x\,\sin\tfrac{1}{x}\,\right)$$

3

Compute the following improper integrals:

$$\int_0^6 \frac{1}{\sqrt{x-3}}\,dx \qquad \int_2^\infty \frac{1}{x\ln x}\,dx$$