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I____ II____ III____ IV____ V____ VI____ VII____ VIII____ IX____ X____ TOTAL_____

November 2
2007

Mathematics 106a
Calculus II
Examination #2

Mr. Haines

(10) I. What is the value of $\frac{1}{\sqrt{2\pi}} \int_0^{\infty} e^{-\frac{x^2}{2}} dx$?

(10) II. Find the integral:

$$\int x \arctan x dx .$$

(10) III. Find:

$$\int \frac{1}{x(x^2 - 1)} dx \quad .$$

(10) IV. Do this indefinite integral:

$$\int (1 + \cos^4 x) \sin x dx \quad .$$

(10) V. Use the substitution $x = \cos u$ to find this indefinite integral:

$$\int \frac{1}{x^2 \sqrt{1-x^2}} dx .$$

(10) VI. Do this indefinite integral:

$$\int x^2 e^x dx .$$

(10) VII. Give the fifth order Maclaurin polynomial for

$$f(x) = \frac{1}{1+x} = (1+x)^{-1}.$$

(10) VIII. Evaluate $\int_0^{\infty} e^{-0.2x} dx$.

(10) IX. Does $\int_{\frac{\pi}{2}}^{\infty} \frac{1}{x + \sin x} dx$ converge? Justify your answer.

(10) X. Does $\int_1^{\infty} \frac{1}{x^{1.2}} dx$ converge? Justify your answer.