

## MAT 126 Calculus B Fall 2005 Practice Midterm II

Answer each question in the space provided and on the reverse side of the sheets. Show your work whenever possible. Unless otherwise indicated, **answers without justification will get little or no partial credit!** Cross out anything that grader should ignore and circle or box the final answer. The actual exam will contain 5 problems. This practice test contains more problems to give you more practice.

1. Evaluate the following definite integrals

(a)

$$\int_0^{13} \frac{2}{(2x+1)^{\frac{2}{3}}} dx$$

(b)

$$\int_0^{\frac{\pi}{2}} e^{\sin x} \cos x dx$$

(c)

$$\int_0^1 x^4(1+x^5)^{20} dx$$

(d)

$$\int_0^1 \tan^{-1} x dx$$

(e)

$$\int_0^{\frac{\pi}{2}} \cos^5 t dt.$$

(f)

$$\int_0^{\frac{1}{2}} \frac{\sin^{-1} x}{\sqrt{1-x^2}} dx$$

(g)

$$\int_{-\pi}^{\pi} \frac{x^2 \sin^3 x}{1+x^6} dx$$

2. Evaluate the following indefinite integrals

(a)

$$\int x^3 e^{x^4} dx$$

(b)

$$\int te^t dt$$

(c)

$$\int x^2 \cos x \, dx$$

(d)

$$\int \cos(\sqrt{x}) \, dx$$

**3.** Evaluate the following indefinite integrals

(a)

$$\int \frac{1}{x^2} \ln x \, dx$$

(b)

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

(c)

$$\int x^{\frac{3}{2}} \ln x \, dx$$

**4.** Evaluate the following indefinite integrals

(a)

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

(b)

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

(c)

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

(d)

$$\int \frac{4x + 7}{2x^2 + 7x - 15} \, dx$$

**5.** (a) Write a formula for  $\tan x$  in terms of  $\sin x$  and  $\cos x$ .

(b) Evaluate

$$\int \tan x \, dx$$

**6.** Evaluate

(a)

$$\int \sqrt{16 - x^2} \, dx$$

(b)

$$\int \frac{1}{x^2 \sqrt{x^2 + 4}} \, dx$$