

Calculus II – Math 121

Spring 2009

Test #1

Name: (print neatly) _____

Instructor: Joyce Servatius

(sign) _____

Box number: _____

This exam is CLOSED NOTES and CLOSED BOOK. There are NO CALCULATORS allowed. To get full credit you must show all work neatly in the space provided on the test paper.

1. [10 pts each] Compute the following definite integrals:

a. $\int_1^2 (8t^3 - 6t^2 + \sqrt{t}) dt$

b. $\int_0^\pi (4 \cos x - 3 \sin x) dx$

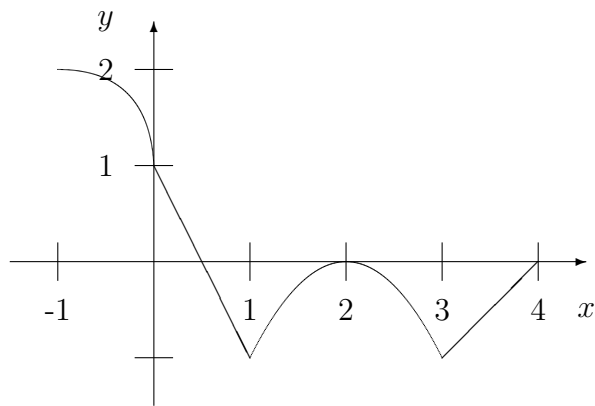
2. [10 pts each] Compute the following indefinite integrals:

a. $\int \frac{1}{\sqrt{4+3t}} dt$

b. $\int \frac{1+\sqrt{t}}{\sqrt{2t}} dt$

c. $\int \sec^2(x/5) dx$

4. [12 pts] A continuous function $f(x)$ is drawn below. Let P be the partition $P = \{-1, 0, 3, 4\}$.



a. On the graph of $f(x)$ above, draw the rectangles corresponding to $L_f(P)$.

b. Compute $L_f(P)$, and $U_f(P)$.

c. Let $Q = \{-1, 0, \pi/12, \pi/9, 3, \pi, 4\}$.

Order from smallest to largest the values: $L_f(Q)$, $U_f(Q)$, $L_f(P)$, $U_f(P)$, and $\int_{-1}^4 f(x) dx$.

5. [8 pts] Let

a) Evaluate $\frac{d}{dx} \int_0^x \frac{1}{1+t^4} dt$

b) Evaluate $\frac{d}{dx} \int_{-x}^x \frac{1}{1+t^4} dt$

6. [8 pts] Suppose $\int_0^3 f(x) dx = 8$ and $\int_3^6 f(x) dx = -6$.

a) Evaluate $\int_0^6 (3f(x) - 4) dx$

b) Evaluate $\int_0^3 (2f(x) - f(2x)) dx$

7. [12 pts] Let $f(x) = 3 - x^2$.

a. Determine the average value of f on the interval $[1, 3]$.

b. Find a value c in the interval $[1, 3]$ such that $f(c)$ equals the average value you found in part a.

Prob	Pts
1	
2	
3	
4	
5	
6	
7	
Total	