

Calculus I

Name: _____

Study Guide 23

Class: _____

Due Date: _____

Score: _____

No Work \Leftrightarrow No Points

Use Pencil Only \Leftrightarrow Be Neat & Organized

1. (3 points) Evaluate: $\int_0^4 \sqrt{x} dx$

1. _____

2. (4 points) Evaluate: $\int_4^9 \left(\frac{1}{\sqrt{x}} + x \right) dx$

2. _____

3. (4 points) Evaluate: $\int_0^{\pi/4} (\cos x + \sin x) dx$

3. _____

4. (2 points) Evaluate: $\int_1^1 \tan x dx$

4. _____

5. (3 points) Evaluate $\int_{-1}^1 (4x^3 - 2x) dx$

5. _____

6. (3 points) State clearly the Mean-Value Theorem for integrals for the function $f(x)$ on $[a, b]$.

The average (mean) value of $f(x)$ on the interval $[a, b]$ is given by $\frac{1}{b-a} \int_a^b f(x) dx$ and is denoted by f_{ave} .

7. Consider the function $f(x) = \sqrt{x}$ and the interval $[0, 4]$.

(a) (3 points) Find f_{ave} .

(a) _____

(b) (4 points) Find a number c in the given interval such that $f(c) = f_{ave}$.

(b) _____

8. Compute the area of the region between the graph of $f(x)$ and the x -axis on the given interval. Drawing Required.

(a) (4 points) $f(x) = x^4$; $[-1, 1]$

(a) _____

(b) (4 points) $f(x) = x^{-2}$; $[-2, -1]$

(b) _____

(c) (4 points) $f(x) = \sin x$; $[0, 2\pi/3]$

(c) _____

(d) (4 points) $f(x) = \cos x$; $[-\pi/2, \pi/2]$

(d) _____

(e) (4 points) $f(x) = \sqrt[3]{x}$; $[1, 8]$

(e) _____

(f) (4 points) $f(x) = \sec^2 x$; $[0, \pi/4]$

(f) _____
