Name_____

Math 142 – Midterm Exam 1

Directions. *Read each question on this exam before you start working so you can get the flavor of the questions. Please show all of your work. Unsupported answers will not even be graded. Do not cheat, else you pay with your academic life.*

GRADES	
Problem 1	/15
Problem 2	/15
Problem 3	/15
Problem 4	/15
Problem 5	/20
Problem 6	/20
Total	/100

1. Evaluate

$$\int_0^1 (2x+1)dx$$

by interpreting it in terms of areas.

2. Find the derivative of the function

$$g(x) = \int_1^{cos(x)} \sqrt{1 - t^2} dt$$

3. Evaluate the following. Be sure to show all of your work.

- $\int_0^2 y^2\sqrt{1+y^3}dy$

- $\int_0^1 sin(3\pi t)dt$

4. Let $r(t)$ be the rate at which the world's oil is consumed, where t is measured in years starting at $t = 0$ on January 1, 2000, and $r(t)$ is measured in barrels per year. What does $\int_0^3 r(t)dt$ represent? Hint: Net Change Theorem.

5. Find the average value of the function $f(t) = tcos(t^2)$ on the interval [0,2].

6. Evaluate the integral

$$\int_0^3 |x^2 - 4| dx$$