

NAME (*please print*): \_\_\_\_\_

HONOR CODE PLEDGE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

Please write your answers clearly to all problems, showing all work. You are not allowed to use any notes or review sheets or calculators during the exam. You have exactly 50 minutes to complete the exam. Good Luck!

| Problem Number | Possible Points | Points Earned: |
|----------------|-----------------|----------------|
| 1              | 20              |                |
| 2              | 20              |                |
| 3              | 10              |                |
| 4              | 10              |                |
| 5              | 15              |                |
| <b>Total:</b>  | <b>75</b>       |                |

- (20) 1. Please use the method of Riemann sums to compute  $\int_0^3 5x \, dx$ .

(20) 2. Please compute the following integrals

(a)  $\int_0^2 (3x^2 + x^3) dx$

(b)  $\int \frac{1}{x \ln(x)} dx$

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

(d)  $\int \sec^5(3x) \tan(3x) dx$

- (10) 3. Please precisely state one of the two forms of the Fundamental Theorem of Calculus.

- (10) 4. Please setup (but do not evaluate) one or more definite integrals giving the following areas:
- (a) The area between the graph  $y = |x| \sin(2x)$  and the  $x$ -axis when  $-\frac{\pi}{2} \leq x \leq \pi$ .

- (b) The area in the fourth quadrant simultaneously above the graphs of both  $f(x) = x^2 - 9$  and  $g(x) = -8x$ .

(15) 5. (a) Please evaluate the sum  $\sum_{i=2}^4 \frac{3^i}{2}$ .

(b) Please write the sum  $-1 + 2 + 5 + 8 + 11 + 14 + 17$  in sigma notation.

(c) Please evaluate  $\int_{-1}^1 5f(x) + 2g(x) dx$  if we know that

$$\int_1^{-1} f(x) dx = \pi,$$

$$\int_{-1}^0 g(x) dx = 3,$$

and  $g(x)$  is an even function.