* * * PHONES OFF!! * * *

IMPORTANT: IF YOU DO NOT SHOW YOUR WORK IN A NEAT AND ORDERLY FASHION, YOU FORFEIT
YOUR CLAIM TO ANY CREDIT.

PLEASE PLACE A BOX AROUND YOUR FINAL RESULTS.

YOU MAY **NOT** USE A CALCULATOR FOR THIS EXAM.

PENALTY FOR NOT FOLLOWING DIRECTIONS: -2 pts

WORK EXACTLY ONE PROBLEM ON EACH PAGE IN THE EXAM BOOK.

I. THE FINAL EXAM FOR THIS COURSE IS
8:00 – 9:50 MONDAY, MAY 6.
WRITE THAT ON THE OUTSIDE FRONT OF YOUR EXAM.

II. EVALUATE EACH INDIFINITE INTEGRAL.

1. $\int \cos^2(x)\,dx$

2. $\int 8x^2 \sin(2x)\,dx$

3. $\int \sin^3(x)\cos^2(x)\,dx$

4. $\int \tan^3(x)\sec^4(x)\,dx$

5. $\int \dfrac{x^3}{16\sqrt{16-x^2}}\,dx$

6. $\int \dfrac{x^2}{\sqrt{x^2+25}}\,dx$

7. $\int \dfrac{x^2-x+2}{(x+1)(x-1)^2}\,dx$

8. $\int \dfrac{7x^2+12}{x^3+4x}\,dx$

III. VERIFY THE INTEGRATION FORMULA.

9. $\int \dfrac{2x-a-b}{(x-a)(x-b)}\,dx = \ln|x-a| + \ln|x-b| + C$

III. EVALUATE EACH LIMIT.

10. $\lim\limits_{x \to 0} \dfrac{\cos(x)-1}{e^x-1}$

11. $\lim\limits_{x \to \infty} \left(e^x+1\right)^{1/x}$

IIII. EVALUATE THE DEFINITE INTEGRAL.

12. $\displaystyle\int_{2}^{\infty} \dfrac{6}{(x-1)^4}\,dx$