Math 17B
Test 2

Printed Name _____
(FIRST) (LAST)

Signature _____

Please Show All Your Work, and Mark Your Answers Clearly.

No Calculators -- No Scratch Paper -- No Cell Phones

There are **4 pages** of problems. (The last problem is for extra credit.)

You are expected to do your own work, and to adhere to the UCD Code of Academic Conduct.

Simplify all numerical answers, except in #2 and #7B.

Please indicate clearly if you continue work on the back of a page.

Please stop working **immediately** when time is called;
you are subject to a deduction from your test score if you do not.

① Find $\int x^2 \cos 5x \, dx$.

9 pts

② Approximate $\int_1^9 \frac{1}{x^3+2} \, dx$ using Simpson's Rule with $n=4$. (You do NOT have to simplify numerically.)

5 pts

③ Find $\int \frac{2x^2 - 11x - 6}{x^3 - 2x^2} \, dx$.

9 pts

④ EVALUATE $\int_1^3 x^2 \ln x \, dx$.

9 PTS

⑤ EVALUATE $\int_4^{12} \frac{24}{\sqrt{x}\,(x+4)} \, dx$.

9 PTS

⑥ FIND $\int_1^\infty \frac{30x}{(x^2+2)^2} \, dx$, OR SHOW THAT THIS INTEGRAL DIVERGES.

9 PTS

① A) FIND THE TAYLOR POLYNOMIAL $P_3(x)$ FOR $f(x) = \sqrt{x}$ ABOUT $a = 100$.
(SIMPLIFY THE COEFFICIENTS.)

9 PTS

B) USE PART A) TO APPROXIMATE $\sqrt{102}$. (YOU DO NOT HAVE TO SIMPLIFY NUMERICALLY.)

4 PTS

⑧ FIND $\int x^3 e^{x^2}\, dx$.

9 PTS

⑨ FIND $\int \frac{x^2 + 16x + 18}{(x-1)(x^2+4)}\, dx$.

12 PTS

(10) FIND $\int \frac{x^2}{(x^2+16)^2}\,dx$ (WITHOUT USING PARTIAL FRACTIONS).

9 PTS

(11) SOLVE THE DE $\frac{dy}{dt} = 2y + 3$, $y(0) = 4$. (YOU MAY USE ANY CORRECT METHOD.)

9 PTS

(12) FIND $\int \frac{5x-7}{x^2-6x+34}\,dx$.

9 PTS (EXTRA CREDIT)