

NAME _____ QUIZ II Due: Friday, Oct. 9
please print clearly MATH 173 25 points

Open book, open notes, but you must do your own work. In particular, no “internet” help.
To receive credit, show all appropriate work.
Neatness, clarity and quality of work will be worth an unspecified number of points.
Please use pencil, otherwise this quiz will not be graded.

- (4) 1. Use **differentiation** to determine whether the following integration “formula” is Right or Wrong.

$$\int 16x^3 \ln x \, dx = 4x^4 \ln x - x^4 + C.$$

- (16) 2. Find the following indefinite integrals.

$$\int \frac{(4x^2 - 1)^2}{x^3} \, dx$$

$$\int \frac{\cos \sqrt{t}}{\sqrt{t}} \, dt$$

$$\int \frac{x^2 + 1}{\sqrt{x^3 + 3x}} dx$$

$$\int \frac{x^2 + 1}{x^3 + 3x} dx$$

- (5) 3. Use substitution to evaluate and *simplify* the following definite integral. Remember to change the limits of integration after your substitution.

$$\int_{t=0}^{t=\pi} \frac{\cos(t/2)}{3 + 4\sin(t/2)} dt$$

Extra Credit (5 points) Verify the original Archimedes Theorem (September 28 lecture) for the region below the line $y = 2x + 3$ and above the parabola $y = x^2$.

Turn your work on a separate sheet of paper. Do a good Job!