

Homework #0

Math 273
Spring 2010
H. Moreland

Name: _____
18 January 2010

This homework assignment is due at the beginning of class on Tuesday, January 18th. Please work the problems on clean sheets of paper (no spirals), but use this page as a cover sheet when you turn it in (stapled). **I expect your solutions to be written up neatly, showing all steps in a clear fashion using the correct notation. I should not receive a first draft with mistakes and things crossed-out.** You may work together, but please do not discuss the problems with other instructors/professors. The work you turn in must be your own and represent your understanding of the material. The point total for each problem is in the left margin.

- (25) 1. Evaluate the following integrals:

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

(d) $\int \frac{x^2}{\sqrt{1-x^2}} \, dx$

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

(e) $\int \frac{2x}{(x+1)(2-x)} \, dx$

(c) $\int_0^\pi \sin^3 x \, dx$

- (5) 2. The arc length of the function $y = f(x)$ between $x = a$ and $x = b$ is given by

$$L = \int_a^b \sqrt{1 + [f'(x)]^2} \, dx$$

Use this to find the arc length of $y = x^3 + \frac{1}{12x}$ between $x = \frac{1}{2}$ and $x = 2$.

- (5) 3. The area of the surface of revolution by rotating the graph of $y = f(x)$ about the x -axis between $x = a$ and $x = b$ is given by

$$A = \int_a^b 2\pi f(x) \sqrt{1 + [f'(x)]^2} \, dx$$

Apply this formula to $y = \sqrt{4+3x}$ between $x = 0$ and $x = 2$.

(3) 4. $\int \frac{s+10}{(2s-1)(s+3)} \, ds$

(4) 5. $\int \frac{\sqrt{x^2-25}}{x} \, dx$