

NAME:

Rec. Instructor:

Math 221 – Analytic Geometry and Calculus 2

Exam 2, Summer 2013

In order to receive full credit (or any credit at all), answers must be justified. Put a box around your final answer so the grade knows what your solution is. Use exact numerical answers, NOT calculator-generated answers. Solutions do not need to be completely simplified in order to receive full credit. The point value of each problem appears in parenthesis.

(15) Problem 1. Find the nth Taylor polynomial of $f(x) = e^{4x}$ centered at $a=1$.

(20) Problem 2. Evaluate the indefinite integral.

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

(10) Problem 3. Compute the surface area obtained by revolving $f(x) = 17x + 30$ about the x-axis on the interval $[0,1]$.

(20) Problem 4. Compute the center of mass of the region bounded by $f(x) = x$ and $f(x) = \sqrt{x}$ on the interval $[0,1]$ assume that $\rho = 1$.

(15) Problem 5. An isosceles triangle is submerged into water. The base of the triangle is parallel to and touching the surface of the water. The base has length 6m and the sides have length 5m. Calculate the fluid force on the face of the triangle assuming water has mass density 1000 kg/m^3 and gravity is 9.8 m/s^2 .

(20) Problem 6. Calculate the arc length of $f(x) = x^2$ over the interval $[0,1]$.