

Math 187 – Quiz #1

January 25, 2013

Instructor: Patricia Wrean & Gilles Cazalais

Name: _____

Total: 25 points

1. Evaluate the following integrals. (6 points)

a) $\int_1^2 (12x^5 - 4x) dx$ _____

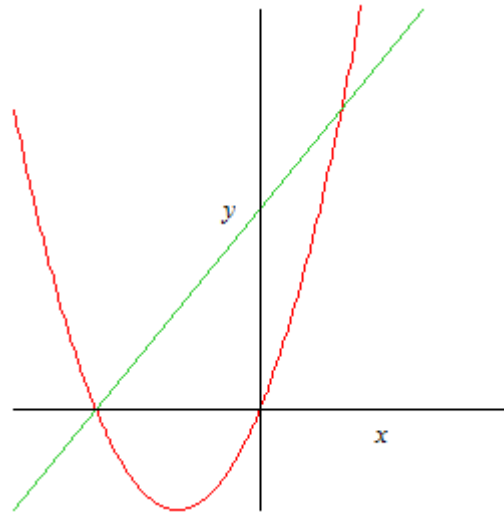
b) $\int (3m\sqrt{m} + 4) dm$ _____

c) $\int x^2 \sqrt[3]{8-x^3} dx$ _____

2. Approximate the integral $\int_2^3 \frac{\sqrt{x+1}}{x} dx$ with $n = 4$ using Simpson's rule. Round your answer to three decimal places. (4 points)

3. Find the equation of a curve $y = f(x)$ whose slope is $\frac{1}{(2x+3)^5}$. The curve passes through the point $(-1,4)$. (5 points)

4. Find the area bounded by $y = x^2 + 2x$ and $y = x + 2$. (5 points)



5. A wind turbine has to be brought to a stop for maintenance. At the time the brakes are initially applied, the turbine is rotating at 2 rads per second. During the braking, the angular acceleration of the turbine is given by

$$\alpha = -0.015\sqrt{1+5t}$$

where α is in rads/s² and t is in seconds. How long does it take for the turbine to come to a complete stop? (5 points)

(Hint: rotating objects have angular acceleration $\alpha = \frac{d\omega}{dt}$.)