NAME: MATH1210-002

Quiz 11: §4.2 & 4.3

July 21, 2016

Instructions: Please show all of your work as partial credit will be given where appropriate, *and* there may be no credit given for problems where there is no work shown. All answers should be boxed and completely simplified, unless otherwise stated. No electronics are allowed.

1. **[?? points]** Approximate the definite integral $\int_{-2}^{4} x^2\,dx$ using a midpoint Riemann sum with three subintervals of equal size.

2. **[?? points]** Allen is trying to compute $\int_0^3 x^2 + x + 2\,dx$ directly from the definition. He came up with the following formula for the right Riemann sum with n equal sized subintervals, but now he's stuck. Help him finish.

$$S_n = \frac{3}{n^3}\sum_{i=1}^{n}(9i^2 + 3ni + 2n^2)$$

3. **[8 points each]** For each of the following, find $g'(x)$ using the Fundamental Theorem of Calculus.

   (a) $g(x) = \int_0^x x^2 \sin(t^2 - 1)\,dt$

   (b) $g(x) = \int_6^{2x^2} \cos(t^4)\,dt$

4.