NAME: MATH1210-002

Quiz 12: §4.4, 4.5 & 5.1

July 28, 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. **[8 points]** Find the area of the region bounded by the curves $y = x^2$ and $y = 4x - x^2$.

Area:_____

2. Evaluate these integrals.

   (a) **[8 points]** $\displaystyle\int_2^3 x\sqrt{x^2-4}\,dx$

Answer:_____

(b) **[8 points]** $\displaystyle\int \frac{\cos(3\sqrt{x})}{\sqrt{x}}\,dx$

Answer:_____

3. **[8 points]** Find the value(s) of c guaranteed by the *Mean Value Theorem for Integrals* for $f(x) = \cos(2x)$ on the interval $[0, \pi]$.

Answer:_____

4. **[8 points]** Find the average value of $f(x) = \frac{x}{\sqrt{x^2+16}}$ on $[0, 3]$.

Answer:_____