

Name: _____ Due 12/19/2016
Math 201-EC Exam 4

Directions Answer all questions in the space provided. Show all work and box your final answers. Turn in this exam in NAC 0/201 on Monday, 12/19/2016, before we take our final exam at 1pm. (Please arrive 15 minutes early.) Good luck!

1. Use the Midpoint Rule with $n = 6$ to approximate the following integral. You may leave your answer as a sum of terms.

$$\int_1^4 \sqrt{x^3 + 1} dx$$

2. Evaluate each of the following definite integrals.

(a) $\int_0^1 x^2(\sqrt[3]{x} + \sqrt[4]{x}) dx$

(b) $\int_{1/2}^1 \frac{\cos(1/x^2)}{x^3} dx$

3. Evaluate each of the following indefinite integrals.

(a) $\int \frac{x^2}{\sqrt[3]{1+x^3}} dx$

(b) $\int (\tan^2 5\theta + 1) \sec 5\theta \tan 5\theta d\theta$

4. Let $F(x) = \int_{\cos x}^{\sin^2 x} (1+t^2)^{10} dt$. Find $F'(x)$.

Hint: Use the Fundamental Theorem of Calculus (part I).

5. Suppose $f(6) = 5$ and $f'(x) \leq 4$ for all x . Find the largest possible value of $f(10)$.

Hint: Use the Mean Value Theorem.