Math - 261: Test # 4
Summer 2006 - LACC

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1. Use the Mean - Value Theorem and prove its requirement for the following functions. Find all c values. (10 pts.)

$$f(x) = x - \sin 2x \qquad x \in [0, \pi]$$

2. Find one solution with two decimal place accuracy for $f(x) = x^3 - 3x + 1$ (8 pts.)

3. If $S(t) = 4 - 8t + t^2$ represents the displacement, find the following:

a. Time(s) that corresponds to velocity incraesing or decreasing.

b. A linear scale of S(t) vs. t, showing the direction, stopping, etc.

4. Evaluate the following indefinite integral: (8 pts.)

$$\int 4x^2(2-x)^8 dx$$

5. Evaluate the following indefinite integral: (8 pts.)

$$\int \frac{\sqrt[3]{x} - \sqrt[4]{x}}{3\sqrt{x}} dx$$

6. Evaluate the following dedefinite integral: (10 pts.)

$$\int_{-3}^{-1} \frac{3x-6}{(x^2-4x)} dx$$

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$$\int_{-3}^{-1} \frac{3x-6}{(x^2-4x)} dx$$

8. Evaluate the following indefinite integral: (8 pts.)

$$\int_{\frac{\pi}{4}}^{\frac{\pi}{3}} 2\sin x \cos^3 x dx$$

9. Find the area bounded between $f(x)$ & $x-axis$ for $0 \le x \le 2$, if $f(x) = -2 + 3\sqrt{4 - x^2}$ (8 pts.)