

Math 261: Calculus - Test # 3(Part one)
Los Angeles City College - Spring 2008

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Name_____

1. For the following polynomial function $f(x) = x^5 - 5x^3 + 20x$, find: (25 pts.)
 - a. All critical points
 - b. Find intervals of increasing and decreasing
 - c. All inflection points and intervals of concavity
 - d. All x & y intercepts
 - e. Graph this function

2. For the following function $f(x) = 2x^{\frac{5}{3}} - 5x^{\frac{4}{3}}$, find: (25 pts.)
 - a. All critical points
 - b. Find intervals of increasing and decreasing
 - c. All inflection points and intervals of concavity
 - d. All x & y intercepts
 - e. Graph this function

3. Sketch a possible graph for $f(x)$ with the following given information: (15 pts.)
 - a. $f'(x) > 0$ for $x \in (1,2) \text{ \& } (2,4) \text{ \& } (4,\infty)$
 - b. $f'(x) < 0$ for $x \in (-\infty,1)$
 - c. $f'(x) = 0$ at $x = 4$ & $f'(x) : \text{undefined for } x = 1$
 - d. $f''(x) < 0$ for $x \in (-\infty,1) \text{ \& } (1,4)$
 - e. $f''(x) > 0$ for $x \in (4,\infty)$
 - f. $f''(x) = 0$ at $x = 4$

4. For the following trigonometric function $f(x) = 2 \cos 2x - \cos x$, find: (25 pts.)
 - a. All critical points
 - b. Find intervals of increasing and decreasing
 - c. All inflection points and intervals of concavity
 - d. All x & y intercepts
 - e. Graph this function

5. Given the following graph of the first derivative of a function, construct a possible sketch of $f(x)$:

