Student Name:_____ Student Number: _____ Serial No.:_____
Instructor: M. Z. Abu-Sbeih Math - 132.1 Quiz No. 3 Date: 26-11-2005.

**SHOW ALL YOUR WORK. NO CREDITS FOR WNSWERS NOT SUPPORTED BY WORK.**

Consider the function $f(x) = x^4 - 4x^3$.

1. Find all intercepts (if any exists).
2. Find asymptotes (if any exists).
3. Find critical numbers and critical points.
4. Find increasing and decreasing intervals.
5. Find local extrema (using the first derivative test).
6. Find concavity intervals.
7. Find inflection points.
8. Use the second derivative test to check the relative extrema of the function.
9. Sketch the graph. Clearly indicate critical points, and the inflection points.

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Student Name:_____ Student Number: _____ Serial No.:_____
Instructor: M. Z. Abu-Sbeih Math - 132.4 Quiz No. 3 Date: 26-11-2005.

**SHOW ALL YOUR WORK. NO CREDITS FOR WNSWERS NOT SUPPORTED BY WORK.**

Consider the function $f(x) = x^4 - 2x^2 + 1$.

1. Find all intercepts (if any exists).
2. Find asymptotes (if any exists).
3. Find critical numbers and critical points.
4. Find increasing and decreasing intervals.
5. Find local extrema (using the first derivative test).
6. Find concavity intervals.
7. Find inflection points.
8. Use the second derivative test to check the relative extrema of the function.
9. Sketch the graph. Clearly indicate critical points, and the inflection points.

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Student Name:_____ Student Number: _____ Serial No.:_____
Instructor: M. Z. Abu-Sbeih Math - 132.5 Quiz No. 3 Date: 26-11-2005.

**SHOW ALL YOUR WORK. NO CREDITS FOR WNSWERS NOT SUPPORTED BY WORK.**

Consider the function $f(x) = 4x^3 - x^4$.

1. Find all intercepts (if any exists).
2. Find asymptotes (if any exists).
3. Find critical numbers and critical points.
4. Find increasing and decreasing intervals.
5. Find local extrema (using the first derivative test).
6. Find concavity intervals.
7. Find inflection points.
8. Use the second derivative test to check the relative extrema of the function.
9. Sketch the graph. Clearly indicate critical points, and the inflection points.