Math-13 Sections 01 and 02

Homework #11

Due: Midnight 11/6

Consider the function:

$$f(x) = x^3 - 4x^2 - 4x + 16$$

1. Using the rational roots theorem, completely factor $f(x)$.
2. What are the critical points of $f(x)$?
3. What is the y-intercept of $f(x)$?
4. What are the critical points of $f'(x)$?
5. Using the first derivative test, determine the relative extrema of $f(x)$.
6. Using the second derivative test, verify the relative extrema of $f(x)$.
7. What are the critical points of $f''(x)$?
8. Using the second derivative, prove that the critical point of $f''(x)$ is a point of inflection.
9. What is the end behavior of $f(x)$?
10. Sketch $f(x)$. For full credit, all intercepts, extrema, and points of inflection must be labeled with their coordinate values.