1. For the graph of $f$ and its derivative on the next page do the following:

(a) Mark the zeros of $f'$ and the local extrema of $f$;
(b) Mark the local extrema of $f'$ and the inflection points of $f$;
(c) Between each of the extrema of $f'$, label the sign of $f''$;
(d) Label the intervals where $f$ is concave up and concave down;
(e) At each of the zeros of $f'$, label the sign of $f''$ on the graph of $f$;
(f) Classify the local extrema of $f$;
(g) Determine the absolute extrema of $f$;
The graph shows two functions, $f(x)$ and $f'(x)$, plotted against the variable $x$. The function $f(x)$ oscillates between different values, while $f'(x)$ represents the derivative, showing the rate of change of $f(x)$ with respect to $x$. The plots are on a Cartesian coordinate system with $y$-axis values ranging from $-2$ to $4$ and $x$-axis values ranging from $0$ to $9$. The graph provides a visual representation of the relationship between $x$ and the values of $f(x)$ and $f'(x)$. 
2. Let \( f(x) = (x^2 - 1)^3 \). Find the following: (a) the intervals where \( f \) is increasing and decreasing; (b) the local extrema of \( f \), including their type and location; (c) the intervals of concavity; (d) the x-coordinates of the points of inflection.
3. Let \( f(x) = x\sqrt{x^4 + 1} \). Find the following: (a) the intervals where \( f \) is increasing and decreasing; (b) the local extrema of \( f \), including their type and location; (c) the intervals of concavity; (d) the \( x \)-coordinates of the points of inflection.