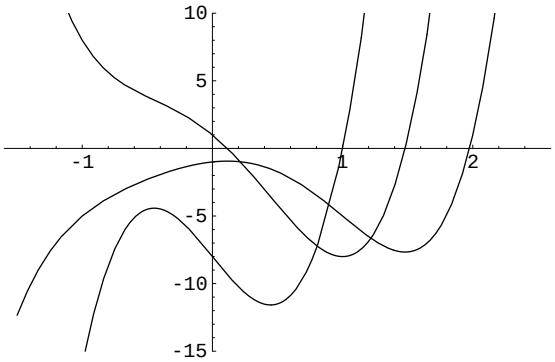
MA 125-06 §2.8, 2.10, 3.1-3.2	**Quiz #4**	*score*	**Name:** _____ **26 September 2000**

1. The graph to the right is a graph of a function $f(x)$ and its first two derivatives. Label the graphs to clearly show which is which. *(5 points)*



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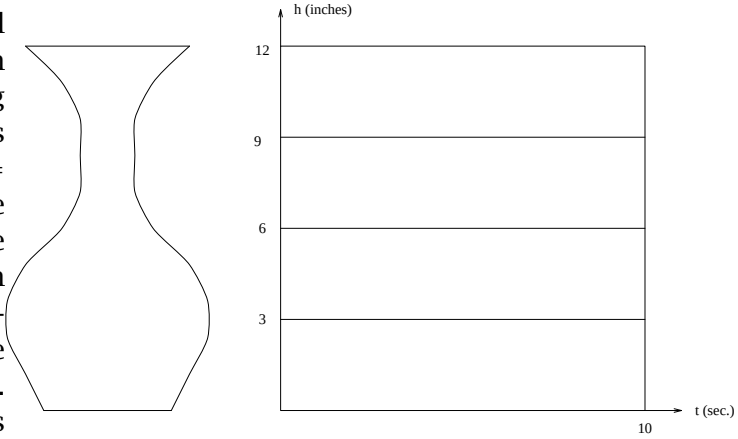
2. An urn which is 12 inches tall is filled with water pouring in *at a constant rate* beginning at time $t = 0$. The urn is completely filled at time $t = 10$ seconds. Let $h(t)$ denote the height of the water in the urn at time t. Draw a graph of $h(t)$ on the coordinate system provided. Show where $h(t)$ is increasing the fastest. Make your graph as accurate as possible with the information given. *(5 points)*



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3. Calculate the derivative of the function $f(x) = x^2 e^x$ and find all values of x for which $f'(x) = 0$. *(5 points)*

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4. Use the quotient rule to find the derivative of $f(x) = \dfrac{x^2 + 2x - 1}{x^2 + 2}$ and simplify the result. *(5 points)*