TeX code compiled with \documentclass{beamer} using the Amsterdam theme.

\begin{document} \begin{frame} Suppose $f ''$ is continuous on $(-\infty,\infty)$. \begin{enumerate}[i)] \item If $f '(1) = 0$ and $f ''(1) = -7$, what can you say about f ? \begin{enumerate}[a)] \item At $x = 1$, f has a local maximum. \item At $x = 1$, f has a local minimum. \item At $x = 1$, $f $ has neither a maximum nor a minimum. \item More information is needed to determine if f has a maximum or minimum at $x = 1$. \end{enumerate} \vskip 10pt \item If $f '(3) = 0$ and $f ''(3) = 0$, what can you say about f ? \begin{enumerate}[a)] \item At $x = 3$, f has a local maximum. \item At $x = 3$, f has a local minimum. \item At $x = 3$, f has neither a maximum nor a minimum. \item More information is needed to determine if f has a maximum or minimum at $x = 3$. \end{enumerate} \end{enumerate} \end{frame} \begin{frame} Imagine that you are skydiving. The graph of your speed as a function of time from the time you jumped out of the plane to the time you achieved terminal velocity is \begin{enumerate} \item increasing and concave up \item decreasing and concave up \item increasing and concave down \item decreasing and concave down \end{enumerate} \end{frame} \begin{frame} An article in the Wall Street Journal's ``Heard on the Street'' column (\emph{Money and Investment} August 1, 2001) reported that investors often look at the ``change in the rate of change'' to help them ``get into the market before any big rallies.'' Your stock broker alerts you that the rate of change in a stock's price is increasing. As a result you \begin{enumerate} \item can conclude the stock's price is decreasing \item can conclude the stock's price is increasing \item cannot determine whether the stock's price is increasing or decreasing. \end{enumerate} \end{frame} \begin{frame} \textbf{True} or \textbf{False}. If $f^{\prime \prime}(a)=0$, then f has an inflection point at a. \end{frame} \begin{frame} For each of the following functions, \begin{enumerate} \item Find the intervals on which the function is decreasing and the intervals on which it's increasing. \item Find the local minima and maxima. \item Find the intervals on which it's concave up and concave down. \item Find the inflection points. \item Once you've done this, display all this information graphically on a number line. \end{enumerate} \begin{enumerate}[a)] \item $f(x) = x^4-8x^2+8$, defined on the entire real line. \vskip 10pt \item $g(x)=2\cos^2(x)-4\sin(x)$, defined on the interval $[0,2\pi]$ \end{enumerate} \end{frame} \begin{frame} \begin{enumerate}[a)] \item Find the critical numbers of the function $f(x) = x^6(x - 2)^5$. \vskip 10pt \item What does the Second Derivative Test tell you about the behavior of f at these critical numbers? \vskip 10pt \item What does the First Derivative Test tell you that the Second Derivative test does not? \end{enumerate} \end{frame} \begin{frame} Suppose the derivative of a function f is $$f'(x) = (x + 1)^4(x - 3)^7(x - 7)^6$$ On what intervals is f increasing? \end{frame} \begin{frame} Find the local maximum and minimum values of each function using both the First and Second Derivative Tests. Which method do you prefer? \begin{enumerate}[a)] \item $f(x)=1+3x^2-2x^3$ \vskip 10pt \item $g(x)=\dfrac{x^2}{x-1}$ \vskip 10pt \item $h(x)=\sqrt{x}-\sqrt[4]{x}$ \end{enumerate} \end{frame} \begin{frame} Sketch the graph of a function that satisfies all of the given conditions: \begin{itemize} \item Vertical asymptote at $x=0$ \item $f'(x)>0$ if $x<-2$ \item $f'(x)<0$ if $x>-2$ and $x\neq 0$ \item $f''(x)<0$ if $x<0$ \item $f''(x)>0$ if $x>0$ \end{itemize} \vskip 20pt Sketch the graph of a function that satisfies all of the given conditions: \begin{itemize} \item $f'(1)=f'(-1)=0$ \item $f'(x)<0$ if $|x|<1$ \item $f'(x)>0$ if $1<|x|<2$ \item $f'(x)=-1$ if $|x|>2$ \item $f''(x)<0$ if $-2<x<0$ \item f has an inflection point at $(0,1)$. \end{itemize} \end{frame} \begin{frame} Suppose \begin{itemize} \item $f(3)=2$ \item $f'(3)=\frac{1}{2}$ \item $f'(x)>0$ for all x. \item $f''(x)<0$ for all x. \end{itemize} \vskip 20pt \begin{enumerate}[a)] \item Sketch a possible graph for f. \vskip 10pt \item How many solutions does the equation $f(x)=0$ have? Why? \vskip 10pt \item Is it possible that $f'(2)=1/3$? Explain. \end{enumerate} \end{frame} \end{document}