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

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\begin{document} \begin{frame} \large Sketch the graph of $y=(x-1)^2+2$ on the closed interval $[-4,4]$. \vskip 15pt \begin{itemize} \item[\bf (a)] What are the local maximum and minimum values? points? \vskip 15pt \item[\bf (b)] What are the absolute maximum and minimum values? points? \end{itemize} \end{frame} \begin{frame} \large Find the critical number of the following functions \vskip 15pt \begin{itemize} \item[\bf (a)] $f(x) = 8x^3-12x^2-48x$ \vskip 15pt \item[\bf (b)] $g(x) = x^{\frac{3}{4}} - 9x^{\frac{1}{4}}$ \vskip 15pt \item[\bf (c)] $h(\theta) = 18\cos(\theta) + 9\sin^2(\theta)$ \end{itemize} \end{frame} \begin{frame} \large Show that $5$ is a critical number of the function $$g(x)=2+(x-5)^2$$ but $g$ does not have a local extreme value of $5$. \vskip 60pt If $f$ has a minimum value of $c$, does the function $g(x)=-f(x)$ have a maximum value of $c$? \end{frame} \begin{frame} \large Let $f(x)$ be a differentiable function on a closed interval with $x=a$ being one of the endpoints of the interval. If $f'(x)>0$ for all $x$, then \vskip 15pt \begin{itemize} \item[\bf (a)] $f$ could have either an absolute maximum or minimum at $x=a$. \vskip 15pt \item[\bf (b)] $f$ cannot have an absolute maximum at $x=a$. \vskip 15pt \item[\bf (c)] $f$ must have an absolute minimum at $x=a$. \vskip 15pt \item[\bf (d)] $x=a$ must be a critical number for $f$. \end{itemize} \end{frame} \begin{frame} \large If $f$ is continuous on $[a,b]$, then \vskip 15pt \begin{itemize} \item[\bf (a)] there must be local extreme values, but there may or may not be an absolute maximum or minimum value for the function. \vskip 15pt \item[\bf (b)] there must be numbers $m$ and $M$ such that $m\leq f(x) \leq M$, for all $x$ in $[a,b]$. \vskip 15pt \item[\bf (c)] any absolute maximum or minimum would be at either the endpoints of the interval, or at places in the domain where $f'(x)=0$. \end{itemize} \end{frame} \begin{frame} \large Find the absolute extrema of: \vskip 15pt \begin{itemize} \item[\bf (a)] $f(x)=x^3-3x+1$ on the interval $[0,3]$. \vskip 15pt \item[\bf (b)] $g(x)=\dfrac{x^2-4}{x^2+4}$ on the interval $[-4,4]$. \vskip 15pt \item[\bf (c)] $h(t)=t\sqrt{4-t^2}$ on the interval $[-1,2]$. \vskip 15pt \item[\bf (d)] $i(x)=x+\cot\left(\frac{x}{2}\right)$ on the interval $\left[\frac{\pi}{4},\frac{7\pi}{4}\right]$. \end{itemize} \end{frame} \begin{frame} \large Find the highest and lowest points on the graph of \( f(x) = x^{3}-3x+6 \) on the following intervals: \vskip 15pt \begin{itemize} \item[\bf (i)] \( [-2,2] \). \vskip 15pt \item[\bf (ii)] \( [-2,3] \). \vskip 15pt \item[\bf (iii)] \( (-2,3)\). \end{itemize} \end{frame} \begin{frame} \large Show that the maximum and minimum values of the function $$f(x) = x^{3}+ax^{2}+bx+c$$ on the interval $[p,q]$ occur at the endpoints if $a^{2} <3b$. \vskip 50pt If $a$ and $b$ are positive numbers, find the maximum value of $$f(x)=x^a(1-x)^b$$ on the interval $[0,1]$. \end{frame} \end{document}
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