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

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\begin{document} \begin{frame} \Large Where are the following functions continuous? \begin{columns} \begin{column}{0.5\textwidth} \begin{itemize} \item[] $$f(x)=\frac{\sqrt{x}}{1+\sin(x)}$$ \item[] $$g(x)=(\sec(x))^2+x$$ \item[] $$a(x)=\frac{x}{|x|}$$ \end{itemize} \end{column} \begin{column}{0.5\textwidth} \begin{itemize} \item[] $$b(x)=\frac{1}{|x-2|}$$ \item[] $$c(x)=\frac{1}{|x-2|+1}$$ \item[] $$e(x)=\frac{1}{1+\sqrt{x}}$$ \end{itemize} \end{column} \end{columns} \end{frame} \begin{frame} Let $P(t) =$ the cost of parking in New York City's parking garages for $t$ hours. So, $$P(t) = \mbox{\$20 per hour or fraction thereof}$$ For example, if you are in the garage for two hours and one minute, you pay $\$60$. Graph the function $P$ and discuss the continuity. \end{frame} \begin{frame} \begin{block}{} \begin{center}{\bf \huge True or False}\end{center} \end{block} If $t_0$ closely approximates some time, $T$, then $P(t_0)$ closely approximates $P(T)$. Be prepared to justify your answer. \end{frame} \begin{frame} You decide to estimate $\pi^2$ by squaring longer decimal approximations of $\pi = 3.14159\ldots$. Choose which of the following can be justified with what you've learned so far: \begin{itemize} \item[i)] This is a good idea because $\pi$ is a rational number. \item[ii)] This is a good idea because $f(x) = x^2$ is a continuous function. \item[iii)] This is a bad idea because $\pi$ is irrational. \item[iv)] This is a good idea because $f(x) = \pi^x$ is a continuous function. \end{itemize} \end{frame} \begin{frame} Define the function $$f(x)=\left\{\begin{array}{ll} 1+x^2&\mbox{ if $x\leq 0$}\\ 4-x&\mbox{ if $0<x\leq 4$}\\ (x-4)^2&\mbox{ if $x>4$} \end{array}\right.$$ Where is $f$ continuous? At the points where it's not continuous, state whether it's continuous from the left, from the right, or neither. AFTER you've done this, sketch the graph of f . \end{frame} \begin{frame} Find all values ${\bf a}$ such that the function $$g(x)=\left\{\begin{array}{ll} x^2&\mbox{ if $x\leq 1$}\\ x+a&\mbox{ if $x> 1$} \end{array}\right.$$ is continuous. \end{frame} \begin{frame} Use the Intermediate Value Theorem to show that the equation $$x^4 + x - 4 = 0$$ has a root in the interval $(1, 2)$. \end{frame} \begin{frame} Argue using the Intermediate Value Theorem that my hair was 6 inches long at some point in the past. If I boast that my beard was once over a foot long, would I be able to use the Intermediate Value Theorem and my present beard length as proof of my claim? \end{frame} \end{document}
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