

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,  $P(t) = \text{\$20 per hour or fraction thereof}$  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  $\pi = 3.14159\dots$ . 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  $f(x)=\left\{\begin{array}{ll} 1+x^2 & \text{if } x \leq 0 \\ 4-x & \text{if } 0 < x \leq 4 \\ (x-4)^2 & \text{if } x > 4 \end{array}\right.$  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  $a$  such that the function
 $g(x)=\left\{\begin{array}{ll} x^2 & \text{if } x \leq 1 \\ x+a & \text{if } x > 1 \end{array}\right.$ 
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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From:

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