

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

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\begin{document} \begin{frame} If  $f(x) = \frac{x^2 - 4}{x - 2}$  and  $g(x) = x + 2$ , then we can say the
functions  $f$  and  $g$  are equal. \end{frame} \begin{frame} \Large  $\lim_{x \rightarrow 2} f(x) = 4$  \hspace 10pt
\lim_{x \rightarrow 2} g(x) = -2 \hspace 10pt \lim_{x \rightarrow 2} h(x) = 0 Find the limits, if they exist: \begin{columns}
\begin{column}{0.5\textwidth} \begin{enumerate} \item[\bf (a)]  $\lim_{x \rightarrow 2} [f(x) + 5g(x)]$  \vskip
30pt \item[\bf (b)]  $\lim_{x \rightarrow 2} [g(x)]^3$  \vskip 30pt \item[\bf (c)]  $\lim_{x \rightarrow 2}
\frac{1}{f(x)}$  \end{enumerate} \end{column} \begin{column}{0.5\textwidth} \begin{enumerate} \item[\bf
(d)]  $\lim_{x \rightarrow 2} 4f(x)g(x)$  \vskip 30pt \item[\bf (e)]  $\lim_{x \rightarrow 2} \frac{g(x)}{h(x)}$ 
\vskip 30pt \item[\bf (f)]  $\lim_{x \rightarrow 2} \frac{g(x)h(x)}{f(x)}$  \end{enumerate} \end{column}
\end{columns} \end{frame} \begin{frame} \LARGE \begin{columns} \begin{column}{0.5\textwidth}
 $\lim_{x \rightarrow 1} \frac{x^2 - 4x + 3}{x - 1}$  \vskip 20pt  $\lim_{x \rightarrow -1} \frac{x^2 - 4x
}{x^2 - 3x - 4}$  \vskip 20pt  $\lim_{h \rightarrow 0} \frac{(-4+h)^2 - 16}{h}$  \end{column}
\begin{column}{0.5\textwidth}  $\lim_{h \rightarrow 0} \frac{\sqrt{9 + h} - 3}{h}$  \vskip 20pt
 $\lim_{x \rightarrow -4} \frac{1/4 + 1/x}{4 + x}$  \vskip 20pt  $\lim_{x \rightarrow 0} \frac{9}{t} -
\frac{9}{t^2 + t}$  \end{column} \end{columns} \end{frame} \begin{frame}
\begin{block}{} \begin{center} \LARGE \textbf{True} or \textbf{False}. \end{center} \end{block} \vskip 30pt \Large
Consider a function  $f(x)$  with the property that  $\lim_{x \rightarrow a} f(x) = 0$ . Now consider
another function  $g(x)$  also defined near  $a$ . Then  $\lim_{x \rightarrow a} [f(x)g(x)] = 0$ 
\end{frame} \begin{frame} \begin{block}{} \begin{center} \LARGE \textbf{True} or \textbf{False}.
\end{center} \end{block} \vskip 30pt \Large If  $\lim_{x \rightarrow a} f(x) = \infty$  and
 $\lim_{x \rightarrow a} g(x) = \infty$ , then  $\lim_{x \rightarrow a} [f(x)g(x)] = 0$ 
\end{frame} \begin{frame} \Large Find the following limits.  $\lim_{x \rightarrow 3} 8x + |x - 3|$  \vskip 15pt
 $\lim_{x \rightarrow -3} \frac{4x + 12}{|x + 3|}$  \vskip 15pt If  $2x - 2 \leq f(x) \leq x^2 - 2x + 2$  for  $x \geq 0$ ,
find  $\lim_{x \rightarrow 2} f(x)$ . \end{frame} \begin{frame} \begin{frame} Consider the function
 $f(x) = \left\{ \begin{array}{ll} x^2 & \text{if } x \text{ is rational, } x \neq 0 \\ -x^2 & \text{if } x \text{ is irrational} \\ \text{undefined} & \text{if } x = 0 \end{array} \right.$ 
Then \begin{enumerate} \item there is no  $a$  for which  $\lim_{x \rightarrow a} f(x)$  exists \item there may be some  $a$  for which
 $\lim_{x \rightarrow a} f(x)$  exists, but it is impossible to say without more information \item  $\lim_{x \rightarrow a} f(x)$  exists only when  $a = 0$  \item  $\lim_{x \rightarrow a} f(x)$  exists for infinitely many  $a$  \end{enumerate} \end{frame} \end{document}

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From:

<https://www2.math.binghamton.edu/> - **Binghamton University Department of Mathematical Sciences**

Permanent link:

https://www2.math.binghamton.edu/p/calculus/resources/calculus_flipped_resources/limits/1.6_limit_laws_tex

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