

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

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\begin{document} \begin{frame} Find the following limits, if they exist. \vskip 5pt \begin{itemize} \item[\bf a)]

$$\lim_{x \rightarrow \infty} \frac{7x^2 - x + 1}{3x^2 + 5x - 5}$$

and

$$\lim_{x \rightarrow \infty} \frac{7x^2 - x + 1}{3x^2 + 5x - 5}$$
. \vskip 30pt \item[\bf b)]

$$\lim_{x \rightarrow \infty} \frac{8x - 9}{2x + 4}$$

and

$$\lim_{x \rightarrow \infty} \frac{8x - 9}{2x + 4}$$
. \vskip 30pt \item[\bf c)]

$$\lim_{x \rightarrow \infty} \frac{x - 8}{x^2 + 7}$$

and

$$\lim_{x \rightarrow \infty} \frac{x - 8}{x^2 + 7}$$
. \end{itemize} \end{frame} \begin{frame} Find the following limits, if they exist. \vskip 5pt
\begin{itemize} \item[\bf d)]

$$\lim_{x \rightarrow \infty} \frac{\sqrt{4x^6 - x}}{x^3 + 3}$$

and

$$\lim_{x \rightarrow \infty} \frac{\sqrt{4x^6 - x}}{x^3 + 3}$$
. \vskip 20pt \item[\bf e)]

$$\lim_{x \rightarrow \infty} (\sqrt{25x^2 + x} - 5x)$$

and

$$\lim_{x \rightarrow \infty} (\sqrt{25x^2 + x} - 5x)$$
. \vskip 20pt \item[\bf f)]

$$\lim_{x \rightarrow \infty} (x + \sqrt{x^2 + 2x})$$

\vskip 10pt \item[\bf g)]

$$\lim_{x \rightarrow \infty} 6 \cos(x)$$

\vskip 10pt \item[\bf h)]

$$\lim_{x \rightarrow \infty} \frac{x^4 - 3x^2 + x}{x^3 - x + 3}$$

\end{itemize} \end{frame} \begin{frame} Find the horizontal and vertical asymptotes of each curve. \begin{enumerate}[a)] \item

$$y = \frac{8x + 3}{x - 4}$$
 \item

$$y = \frac{x^2 + 1}{9x^2 - 80x - 9}$$
 \item

$$y = \frac{x^2 - x}{x^2 - 8x + 7}$$
 \end{enumerate} \end{frame} \begin{frame} Let  $P$  and  $Q$  be
polynomials with positive coefficients. \begin{enumerate}[a)] \item If the degree of  $P$  is less than the degree of  $Q$ ,
what is  $\lim_{x \rightarrow \infty} \frac{P(x)}{Q(x)}$ ? \item If the degree of  $P$  is greater than the degree of  $Q$ ,
what is  $\lim_{x \rightarrow \infty} \frac{P(x)}{Q(x)}$ ? \item If the degree of  $P$  equals the degree of  $Q$ ,
what is  $\lim_{x \rightarrow \infty} \frac{P(x)}{Q(x)}$ ? \end{enumerate} \end{frame} \begin{frame} A tank contains 120 L of
pure water. Brine that contains 25 g of salt per liter of water is pumped into the tank at a rate of 25 L/min. \vskip 15pt
\begin{enumerate}[a)] \item Find the concentration of salt after  $t$  minutes (in grams per liter). \vskip 15pt
\item As  $t$  approaches infinity, what does the concentration approach? \end{enumerate} \end{frame} \begin{frame} Find
 $\lim_{x \rightarrow \infty} (\sqrt{x^2 + cx} - \sqrt{x^2 + dx})$ . (Here  $c$  and  $d$  represent arbitrary
real numbers.) \vskip 25pt Find  $\lim_{x \rightarrow \infty} (x^2 + x^3)$ . \end{frame} \end{document}
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https://www2.math.binghamton.edu/p/calculus/resources/calculus_flipped_resources/applications/3.4_horizontal_asymptotes_tex

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