

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

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\begin{document} \begin{frame} \large You own a company producing iSquids, (the latest portable electronic
craze). Your big production limitation is a scarcity of Chip 187, produced by outside manufacturers. \vskip 5pt If
 $f(x)$  is the profit your company will make if it gets  $x$  Chip 187's and  $g(x)$  is a function giving the number of
Chip 187's you can obtain for  $x$  dollars, which of the following is of interest to you? \vskip 8pt \begin{columns}
\begin{column}{0.5\textwidth} \begin{itemize} \item[\bf (a)]  $f \circ g$  \item[\bf (b)]  $g \circ f$  \end{itemize}
\end{column} \begin{column}{0.5\textwidth} \begin{itemize} \item[\bf (c)] both \item[\bf (d)] neither
\end{itemize} \end{column} \end{columns} \end{frame} \begin{frame} \Large  $f(x) = x + \frac{1}{x}$  \hspace 30pt
 $g(x) = \frac{x+8}{x+2}$  \hspace 30pt  $h(x) = \sqrt{x}$   $\$$  Express each function as an equation. \\\ What is the domain
of each function? \vskip 10pt \begin{columns} \begin{column}{0.5\textwidth}  $(f \circ g)(x)$  \vskip 30pt  $g(f(x))$ 
\vskip 30pt  $(g \circ g)(x)$  \end{column} \begin{column}{0.5\textwidth}  $(h \circ f)(x)$  \vskip 30pt  $(g \circ h)(x)$ 
\vskip 30pt  $h(h(x))$  \end{column} \end{columns} \vskip 20pt \end{frame} \begin{frame} \large For each of the
following functions, first express it as a composition of 2 functions. Then find the derivatives. \vskip 15pt
\begin{columns} \begin{column}{0.5\textwidth} \begin{enumerate} \item[\bf a)]  $F(x) = \sqrt[3]{1+5x}$  \vskip
30pt \item[\bf b)]  $G(x) = (x^4 + 9x^2 + 3)^8$  \vskip 30pt \item[\bf c)]  $F(t) = \sqrt[9]{1 + \tan(t)}$  \end{enumerate}
\end{column} \begin{column}{0.5\textwidth} \begin{enumerate} \item[\bf d)]  $H(x) = \cos(3^7 + x^7)$  \vskip 30pt
\item[\bf e)]  $G(x) = \left(\frac{x^2+8}{x^2-8}\right)^3$  \vskip 30pt \item[\bf f)]  $S(z) = \sqrt{\frac{z-7}{z+7}}$ 
\end{enumerate} \end{column} \end{columns} \end{frame} \begin{frame} \large Find the derivatives. \vskip
15pt \begin{columns} \begin{column}{0.45\textwidth} \begin{enumerate} \item[\bf a)]
 $y = \frac{r}{\sqrt{r^2+3}}$  \vskip 20pt \item[\bf b)]  $y = x \sin\left(\frac{7}{x}\right)$  \vskip 20pt \item[\bf c)]
 $f(t) = \sqrt{\frac{t}{t^2+1}}$  \vskip 20pt \item[\bf d)]  $g(y) = \frac{(y-2)^6}{(y^2+4y)^9}$  \end{enumerate}
\end{column} \begin{column}{0.55\textwidth} \begin{enumerate} \item[\bf e)]  $y = \sin(\tan(8x))$  \vskip 20pt
\item[\bf f)]  $y = \cos(\cos(\cos(x)))$  \vskip 20pt \item[\bf g)]  $y = (1 + \sec(3\pi x + 4\pi))^5$  \vskip 20pt \item[\bf h)]
 $y = \sqrt{11x + \sqrt{11x + \sqrt{11x}}}$  \vskip 20pt \item[\bf i)]  $y = [x + (x + \sin(2x))^6]^7$ 
\end{enumerate} \end{column} \end{columns} \end{frame} \begin{frame} \large If  $h(x) = \sqrt{7 + 6f(x)}$ ,
where \begin{center}  $f(4) = 7$  and  $f'(4) = 2$ , \end{center} find  $h'(4)$ . \vskip 70pt Find the first and second
derivatives of  $y = \sin\left(x^2\right)$ . \end{frame} \begin{frame} \large If  $f$  and  $g$  are both differentiable and
 $h = f \circ g$ ,  $h^{\prime}(2)$  equals \vskip 20pt \begin{enumerate} \item  $f^{\prime}(2) \circ g^{\prime}(2)$ 
\item  $f^{\prime}(2)g^{\prime}(2)$  \item  $f^{\prime}(g(2))g^{\prime}(2)$  \item  $f^{\prime}(g(x))g^{\prime}(2)$ 
\end{enumerate} \end{frame} \end{document}

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From:

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https://www2.math.binghamton.edu/p/calculus/resources/calculus_flipped_resources/derivatives/2.5_chain_rule_tex

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