TeX code compiled with \documentclass{beamer} using the Amsterdam theme. There is one png image needed to compile slides:

arc_chord_limit.png

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\begin{document} \begin{frame} \large \begin{block}{} \begin{center}$\displaystyle\lim_{x\rightarrow
0}\dfrac{\sin(x)}{x} = 1 \hskip 15pt \displaystyle\lim_{x\rightarrow 0}\dfrac{\cos(x)-1}{x} = 0$\end{center}
\end{block} Evaluate the limits: \vskip 5pt \begin{columns} \begin{column}{0.5\textwidth} $$\lim_{x\rightarrow
0}\dfrac{\sin(6x)}{\sin(9x)}$$ \vskip 15pt $$\lim_{\theta\to 0}\dfrac{\cos(7\theta)-1}{sin(9\theta)}$$ \vskip 15pt
$$\lim_{t\to 0}\dfrac{\tan(16t)}{\sin(4t)}$$ \end{column} \begin{column}{0.5\textwidth} $$ \lim_{x\to
0}\dfrac{\sin(x^7)}{x}$$ \vskip 15pt $$ \lim_{x\to 2}\dfrac{\sin(x-2)}{x^2+6x-16}$$ \vskip 15pt $$
\lim_{x\rightarrow 2}\dfrac{3-3\tan(x)}{\sin(x)-\cos(x)} $$ \end{column} \end{columns} \end{frame}
\begin{frame} \LARGE Use both the derivatives of $\sin(x)$ and $\cos(x)$ and the quotient rule to show:
$$\frac{d}{dx}\left( \tan(x)\right)=\sec^2(x)$$ and $$\frac{d}{dx}\left( \sec(x)\right)=\sec(x)\tan(x)$$
\end{frame} \begin{frame} \LARGE \begin{columns} \begin{column}{0.5\textwidth} Find $f'(x)$:
$$f(x)=5x^2+7\sin(x)$$ \vskip 20pt Find $g'(\theta)$: $$g(\theta)=\sec(\theta)\tan(\theta)$$ \end{column}
\begin{column}{0.5\textwidth} Find $F'(x)$: $$F(x)=\dfrac{3-\sec(x)}{\tan(x)}$$ \vskip 20pt Evaluate:
$$\frac{d^2}{d\theta^2}\left(\theta\sin(\theta)\right)$$ \end{column} \end{columns} \end{frame} \begin{frame}
\LARGE Find the equation of the tangent line to the curve $y=14x\sin(x)$ at $x=\pi/2$. \vskip 55pt Find
$$\frac{d^{103}}{dx^{103}}\left(\sin(x)\right) \mbox{ and } \frac{d^{201}}{dx^{201}}\left(\cos(x)\right)$$
\end{frame} \begin{frame} \emph{Step into your teacher's shoes. What is wrong (if anything) with the following
calculations? Explain any errors and correct for them.} \vskip 5pt \begin{block}{} Find all values of x in the interval
$[0,4\pi)$ that satisfy the equation $$\sin(2x) = \cos(x).$$ {\bf Solution:} Since $\sin(2x) = 2\sin(x)\cos(x)$, $$
\sin(2x) = \cos(x) \hskip 20pt \Rightarrow \hskip 20pt 2\sin(x)\begin{cancel}\cos(x)\end{cancel} =
\begin{cancel}\cos(x)\end{cancel} $$ $$\Rightarrow \hskip 20pt 2\sin(x) = 1 \hskip 20pt \Rightarrow \hskip 20pt
\sin(x) = \frac{1}{2}$$ Therefore, $x = \frac{\pi}{3}$ or $x=\frac{5\pi}{3}$. \end{block} \end{frame}
\begin{frame} What does $\displaystyle\lim_{x\rightarrow 0} \frac{\sin(x)}{x} = 1$ mean? Explain why three of
the options are false and one is true. \begin{itemize} \item[a)] $\frac{0}{0} = 1$. \item[b)] The tangent to the
graph of $y =\sin(x)$ at $(0,0)$ is the line $y=x$. \item[c)] You can cancel the x's. \item[d)] $\sin(x) = x$ for x near
0. \end{itemize} \end{frame} \begin{frame} The figure shows a circular arc of length $s$ and a chord of length
$d$, both subtended by a central angle $\theta$. Find $\displaystyle\lim_{\theta\rightarrow 0^+} \frac{s}{d}$.
\begin{center} \includegraphics[height=2in]{arc_chord_limit.png} \end{center} It may be helpful to review the
formulas associated to arcs and isosceles triangles. Further, why would the limit
$\displaystyle\lim_{\theta\rightarrow 0} \frac{s}{d}$ not exist? \end{frame} \end{document}
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