```latex
\documentclass{beamer}
\usepackage[utf8]{inputenc}

\title{Assignment - 2}
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\date{}
\usepackage{graphicx}
\usetheme{Warsaw}
\institute{\large{Mata Sundri College For Women\\
University of Delhi}}
\begin{document}
\begin{frame}
\titlepage
\end{frame}
\begin{frame}{Example - 9.5}
\begin{itemize}
    \item Let $\mathbf{x}=(x_{1},\ldots,x_{n})$,where
    $x_i$ are non-negative real numbers. Set
    \[M_r(\mathbf{x})=\left(\frac{x_1^r+x_2^r+\cdots+x_n^
    r}{n}\right)^{1/r},r\in \mathbf{R} \setminus \{0\},\]
    and
    \[M_0(\mathbf{x})=\left(x_1x_2 \ldots
    x_n\right)^{1/n}.\]
     We call $M_r(\mathbf{x})$ the \emph{$r$th power
     mean} of $\mathbf{x}$.
    Claim:
    $$\lim_{r\rightarrow0}M_r(\mathbf{x}) =
    M_0(\mathbf{x}).$$
    \end{itemize}
    \end{frame}
\begin{frame}{Example-9.5 continued..}
\begin{itemize}
     \item Define
    \[V_n=\left[\begin{array}{ccccc}
         1&1&1& \ldots &1  \\
         x_1&x_2&x_3& \ldots &x_n\\
         x_1^2&x_2^2&x_3^2& \ldots &x_n^2\\
         \vdots & \vdots &\vdots &\ddots &\vdots \\
         x_1^{n-1}&x_2^{n-1}&x_3^{n-1}& \ldots
         &x_n^{n-1}\\
     \end{array}\right]\]
     We call $v_n$ the \emph{Vandermonde matrix} of order
     \emph{n}.\\
    Claim :
    $$\det V_n = \prod_{1 \leq i < j \leq n}(x_j-x_i).$$
     \end{itemize}
\end{frame}
\begin{frame}{Question 4: Make the equations.}
\begin{itemize}
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\begin{frame}{Question 4: Make the equations.}
\begin{itemize}
    \item  \[3^3+4^3+5^3=6^3\]
    \item \[\sqrt{100}=10\]
    \item \[(a+b)^3=a^3+b^3+3a^2b+3ab^2\]
    \item \[\sum_{k=1}^n k=\frac{n(n+1)}{2}\]
    \item \[\frac{\pi}{4}=\frac{1}{1}-\frac{1}{3}+\frac{1
    }{5}-\frac{1}{7}+\frac{1}{9}-\frac{1}{11}+\cdots\]
\end{itemize}
\end{frame}
\begin{frame}{Remaining parts of Q4}
\begin{itemize}
      \item \[cos\theta=sin(90^\circ-\theta)\]
     \item \[e^{i\theta}=cos\theta+isin\theta\]
    \item  $$\lim_{\theta\rightarrow0}\frac{sin\theta}{\t
    heta}=1$$
    \item $$\lim_{x\rightarrow
    \infty}\frac{\pi(x)}{x/logx}=1$$
    \item $$\int_{-\infty}^{\infty}
    e^{-x^2}dx=\sqrt{\pi}$$
    \end{itemize}
    \end{frame}
\begin{frame}{Question 5: Typeset the sentences.}
\begin{itemize}
    \item Positive numbers \emph{a,b} and \emph{c} are
    the side lengths of a triangle if and only if
    $a+b>c,b+c>a$, and $c+a>b.$
    \item The area of a triangle with side lengths a,b,c
    is given by \emph{Heron's formula}:
    \[A=\sqrt{s(s-a)(s-b)(s-c)}\]
    where \emph{s} is the semiperimeter $(a+b+c)/2$.
    \item The volume of a regular tetrahedron of edge
    length 1 is $\sqrt{2}/12$.
\end{itemize}
\end{frame}
\begin{frame}{Remaining parts Q5}
\begin{itemize}
    \item The quadratic equation $ax^2+bx+c=0$ has roots
    \[r_1,r_2=\frac{-b\pm \sqrt{b^2-4ac}}{2a}\].
    \item The \emph{derivative} of a function \emph{f},
    denoted \emph{f'}, is defined by
    \[f'(x)=\lim_{h\rightarrow0}\frac{f(x+h)-f(x)}{h}\].
    \item A real-valued function \emph{f} is
    \emph{convex} on an interval \emph{I} if
    \[f(\lambda x+(1-\lambda)y)\leq\lambda
    f(x)+(1-\lambda)f(y),\]for all $x,y\in I$ and $0 \leq
    \lambda \leq 1$.
\end{itemize}
\end{frame}
\begin{frame}{Remaining part of Q5}
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\begin{frame}{Remaining part of Q5}
  \begin{itemize}
    \item The general solution to the differential
    equation
    $$y''-3y'+2y=0$$ is $$y=C_1e^x+C_2e^{2x}.$$
    \item The \emph{Fermat number} $F_n$ is defined as
    $$F_n=2^{2^{n}}, n\geq 0$$
  \end{itemize}
\end{frame}
\begin{frame}{Question 6:Make the equations}
\begin{itemize}
    \item \[\frac{d}{dx}\left(\frac{x}{x+1}\right)=\frac{
    1}{(x+1)^2}\]
    \item \[\lim_{n\rightarrow\infty}\left(1+\frac{1}{n}\
    right)^n=e\]
    \item \[\left|\begin{array}{cc}
        a&b  \\
        c&d
    \end{array}\right|=ad-bc\]
    \item \[R_\theta=\left[\begin{array}{cc}
    cos\theta&-sin\theta\\
    sin\theta&cos\theta
    \end{array}\right]\]
    \end{itemize}
    \end{frame}
    \begin{frame}{Remaining parts of Q6}
    \begin{itemize}
        \item $\left|\begin{array}{ccc}
            \textbf{i} & \textbf{j} &\textbf{k}\\
            a_{1} & a_{2} & a_{3}\\
            b_{1} & b_{2} & b_{3}
            \end{array}
            \right|=\left|\begin{array}{cc}
                a_{2} &a_{3}\\
                b_{2} & b_{3}
                \end{array}
                \right|\textbf{i}-\left|\begin{array}{cc}
                    a_{1} &a_{3}\\
                    b_{1} & b_{3}
                \end{array}
                \right|\textbf{j}+\left|\begin{array}{cc}
                    a_{1} &a_{2}\\
                    b_{1} & b_{2}
                \end{array}\right|\textbf{k}$

    \item $$\left[\begin{array}{cc}
                    a_{11} &a_{12}\\
                    a_{21} & a_{22}
                \end{array}\right]\left[\begin{array}{cc}
                b_{11} &b_{12}\\
                b_{21} & b_{22}
            \end{array}\right]=\left[\begin{array}{cc}
            a_{11}b_{11} +a_{12}b_{21} & a_{11}b_{12}
            +a_{12}b_{22}\\
            a_{21}b_{11} +a_{2 2}b_{21} & a_{21}b_{12}
            +a_{22}b_{22}
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            \end{array}\right]=\left[\begin{array}{cc}
            a_{11}b_{11} +a_{12}b_{21} & a_{11}b_{12}
            +a_{12}b_{22}\\
            a_{21}b_{11} +a_{2 2}b_{21} & a_{21}b_{12}
            +a_{22}b_{22}
            \end{array}\right]$$
\item $f(x)\left\{
        \begin{array}{cc}
        -x^2 , & x<0 \\
        x^2 , & 0\leq x\leq 2\\
        4, & x>2
    \end{array}\right.$
    \end{itemize}
    \end{frame}
    \begin{frame}{Question 7:Make multi-line equations.}
     \begin{eqnarray*}
        1+2&=&3\\
        4+5+6&=&7+8\\
        9+10+11+12&=&13+14+15\\
        16+17+18+19&=&21+22+23+24\\
        25+26+27+28+29+30&=&31+32+33+34+35
         \end{eqnarray*}
         \end{frame}
     \begin{frame}{Second part of Q 7}
        \begin{itemize}
            \item \begin{eqnarray*}
            (a+b)^{2}&=&(a+b)(a+b)\\&=&(a+b)a+(a+b)b\\&=&
            a(a+b)+b(a+b)\\&=&a^{2}+ab+ba+b^{2}\\&=&a^{2}
            +ab+ab+b^{2}\\&=&a^{2}+2ab+b^{2}
            \end{eqnarray*}
        \end{itemize}
     \end{frame}
          \begin{frame}{Third part Q 7}
        \begin{itemize}
            \item \begin{eqnarray*}
            \tan(\alpha+\beta+\gamma)&=&\frac{\tan(\alpha
            +\beta)+\tan\gamma}{1-\tan(\alpha+\beta)\tan\
            gamma}\\
    &=&\frac{\frac{\tan\alpha+\tan\beta}{1-\tan\alpha\bet
    a}+\tan\gamma}{1-\left(\frac{\tan\alpha+\tan\beta}{1-
    \tan\alpha\beta}\right)\tan\gamma}\\
    &=&\frac{\tan\alpha+\tan\beta+(1-\tan\alpha\tan\beta)
    \tan\gamma}{1-\tan\alpha\tan\beta-(\tan\alpha+\tan\be
    ta)\tan\gamma}\\
    &=&\frac{\tan\alpha+\tan\beta+\tan\gamma-\tan\alpha\t
    an\beta\tan\gamma}{1-\tan\alpha\tan\beta-\tan\alpha\t
    an\gamma-\tan\beta\tan\gamma}\\
  \end{eqnarray*}
            \end{itemize}
            \end{frame}
 \begin{frame}{Fourth part Q 7}
        \begin{itemize}
            \item \begin{eqnarray*}
            \prod_{p}\left(1-\frac{1}{p^2}\right)&=&\prod
            _{p}\frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\c
            dots}\\
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        \begin{frame}{Third part Q 7}
        \begin{itemize}
            \item \begin{eqnarray*}
            \tan(\alpha+\beta+\gamma)&=&\frac{\tan(\alpha
            +\beta)+\tan\gamma}{1-\tan(\alpha+\beta)\tan\
            gamma}\\
    &=&\frac{\frac{\tan\alpha+\tan\beta}{1-\tan\alpha\bet
    a}+\tan\gamma}{1-\left(\frac{\tan\alpha+\tan\beta}{1-
    \tan\alpha\beta}\right)\tan\gamma}\\
    &=&\frac{\tan\alpha+\tan\beta+(1-\tan\alpha\tan\beta)
    \tan\gamma}{1-\tan\alpha\tan\beta-(\tan\alpha+\tan\be
    ta)\tan\gamma}\\
    &=&\frac{\tan\alpha+\tan\beta+\tan\gamma-\tan\alpha\t
    an\beta\tan\gamma}{1-\tan\alpha\tan\beta-\tan\alpha\t
    an\gamma-\tan\beta\tan\gamma}\\
  \end{eqnarray*}
            \end{itemize}
            \end{frame}
  \begin{frame}{Fourth part Q 7}
        \begin{itemize}
            \item \begin{eqnarray*}
            \prod_{p}\left(1-\frac{1}{p^2}\right)&=&\prod
            _{p}\frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\c
            dots}\\
    &=&\left(\prod_{p}\left(1+\frac{1}{p^2}+\frac{1}{p^4}
    +\cdots\right)
    \right)^{-1}\\
    &=&\left(1+\frac{1}{2^2}+\frac{1}{3^3}+\frac{1}{4^4}+
    \cdots\right)^{-1}\\
    &=&\frac{6}{\pi}^2
            \end{eqnarray*}
            \end{itemize}
            \end{frame}
\begin{frame}
\begin{center}
  \includegraphics[width=11cm,height=8cm]{Thankyou.jpg}
  \end{center}
\end{frame}
\end{document}
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