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```
\documentclass[xcolor=dvipsnames]{beamer}
\usepackage[utf8]{inputenc}
\usepackage{mathtools}
\usepackage{xcolor}
\usepackage{nopageno}
\definecolor{UBCblue}{rgb}{0.4706, 0.13725, 0.26667}
\usecolortheme[named=UBCblue]{structure}
\usetheme{Madrid}
\useoutertheme{miniframes}
\useinnertheme{circles}
\usepackage{graphicx}
\setbeamertemplate{background}{\includegraphics[width=\paperwidth,height=\paperheight]{bg.jpg}}
\title{\huge {\emph {Mata Sundri College for Women,\\ University of Delhi}}}
\institute{\Large {\emph{\textcolor{blue}{College Roll No.- MAT/20/17\\ \vspace{0.1cm}
University Roll No.- 20044563007}}}}
\author{\huge {\emph{\textcolor{red}{Yukti Aggarwal}}}}
\date{}
\begin{document}
\maketitle
\thispagestyle{empty}

\begin{frame}{\emph{\textcolor{yellow}{Content of Page No. 69}}}
\begin{block}{}
\begin{itemize}
    \item Let \textbf{x}=$(x_1,\ldots,x_n)$, where the $x_i$ are non-negative real numbers. Set\\
   \[M_r(\textbf{x}) = \left(\frac{x_1^r+x_2^r+\cdots+x_n^r}{n}\right)^{1/r}, r \in \mathbb{R}\setminus \{0\}\]
   and
   \[M_0(\textbf{x}) = (x_1x_2\ldots x_n)^{1/n}\]
   We call $M_r(\textbf{x})$ the \emph{$r^{th}$  power mean} of \textbf{x}.\\
   \vspace{0.2cm}Claim:\vspace{0.2cm}
   $$\lim_{r\rightarrow 0}M_r(\textbf{x}) = M_0(\textbf{x}).$$\\[0.2cm]
  \end{itemize}
  \end{block}
 \end{frame}

\begin{frame}
```

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```latex

\begin{frame}
\begin{block}{}


\begin{itemize}
    \item Define
    $$V_n =
    \left[\begin{array}{ccccc}
 1 & 1 & 1 & \ldots & 1\\
 x_1 & x_2 & x_3 & \ldots & x_n\\
 x_1^2 & x_2^2 & x_3^2 & \ldots & x_n^2\\
 \vdots&\vdots&\vdots&\ddots&\vdots\\
 x_1^{n-1}& x_2^{n-1} & x_3^{n-1} & \ldots & x_n^{n-1}\\
\end{array}\right]$$
\\[0.25cm]
We call $V_n$ the \emph{Vandermonde matrix} of order $n$.\\
\vspace{0.2cm}Claim:\vspace{0.3cm}
$$ \det V_n = \prod_{1\leq i < j \leq n}(x_j - x_i).$$\\[0.2cm]
  \end{itemize}
  \end{block}
\end{frame}
\begin{frame}{\emph{\textcolor{yellow}{Question 4. Make the following equations}}}
\begin{block}{}
\begin{itemize}
    \item $$3^3 + 4^3 + 5^3 = 6^3$$\\[0.2cm]
\end{itemize}
    \end{block}
  \begin{block}{}
  \begin{itemize}
    \item $$\sqrt{100} = 10$$\\[0.2cm]
\end{itemize}
  \end{block}
  \begin{block}{}
   \begin{itemize}
    \item $$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$\\[0.2cm]
```

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```
    \item $$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$\\[0.2cm]
\end{itemize}
  \end{block}
  \begin{block}{}
  \begin{itemize}
      \item $$\sum_{k=1}^n k = {\frac{n(n+1)}{2}}$$\\[0.2cm]
  \end{itemize}
  \end{block}
  \end{frame}
  \begin{frame}{\emph{\textcolor{yellow}{Remaining parts of Question 4}}}
  \begin{block}{}
  \begin{itemize}
      \item  $$\frac{\pi}{4} = \frac{1}{1}-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\frac{1}{9}-\frac{1}{11}+\cdots$$\\[0.2cm]

  \end{itemize}
  \end{block}
  \begin{block}{}
  \begin{itemize}
      \item $$\cos \theta = \sin (90^{\circ} - \theta)$$\\[0.2cm]
  \end{itemize}

 \end{block}
  \begin{block}{}
  \begin{itemize}
      \item $$e^{\iota \theta} = \cos \theta + \iota \sin \theta$$\\[0.2cm]
  \end{itemize}

 \end{block}
 \begin{block}{}
 \begin{itemize}
      \item $$\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$$\\[0.2cm]
  \end{itemize}
  \end{block}
  \end{frame}
   \begin{frame}{\emph{\textcolor{yellow}{Remaining parts of Question 4}}}
```

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```latex
  \end{frame}
   \begin{frame}{\emph{\textcolor{yellow}{Remaining parts of Question 4}}}
  \begin{block}{}
  \begin{itemize}
      \item $$\lim_{\theta \rightarrow \infty} \frac{\pi (x)}{x/ logx} = 1$$\\[0.2cm]
  \end{itemize}
  \end{block}
  \begin{block}{}
  \begin{itemize}
      \item $$\int_{-\infty}^\infty e^{-x^2} dx = \sqrt{\pi}$$\\[0.2cm]
  \end{itemize}
  \end{block}
\end{frame}
\begin{frame}{\emph{\textcolor{yellow}{Question 5. Typeset the following sentences}}}
  \begin{block}{}
  \begin{itemize}
      \item Positive numbers $a$, $b$, and $c$ are the side lengths of a triangle if and only if $a + b > c$, $b + c > a$, and $c + a > b$.\\[0.2cm]
   \end{itemize}
   \end{block}
   \begin{block}{}
   \begin{itemize}
      \item The area of a triangle with side lengths $a$, $b$, $c$ is given by \emph{Heron's formula}:
      \vspace{0.2cm}
      $$A = \sqrt{s(s-a)(s-b)(s-c)}$$
      where $s$ is the semiperimeter $(a+b+c)/2$.\\[0.2cm]
      \end{itemize}
   \end{block}
   \begin{block}{}
   \begin{itemize}
      \item The volume of a regular tetrahedron of edge length 1 is $\sqrt{2}/12$.\\[0.2cm]
  \end{itemize}
\end{block}
\end{frame}
\begin{frame}{\emph{\textcolor{yellow}{Remaining parts of Question 5}}}
\begin{block}{}
```

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\begin{frame}{\emph{\textcolor{yellow}{Remaining parts of Question 5}}}
\begin{block}{}
\begin{itemize}
    \item The quadratic equation $ax^2+bx+c=0$ has roots
    $$r_1,r_2 = \frac{-b\pm \sqrt{b^2-4ac}}{2a}$$\\[0.2cm]
\end{itemize}
\end{block}
\begin{block}{}
\begin{itemize}
    \item The \emph{derivative} of a function \emph{f}, denoted \emph{f'}, is defined by
    $$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h)-f(x)}{h}.$$\\[0.2cm]
    \end{itemize}
\end{block}
\end{frame}
\begin{frame}{\emph{\textcolor{yellow}{{Remaining parts of Question 5}}}}
\begin{block}{}
\begin{itemize}
    \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 $0 \leq \lambda \leq 1.$\\[0.2cm]
    \end{itemize}
\end{block}
 \begin{block}{}
\begin{itemize}
    \item The general solution to the differential equation
    $$y''- 3y' + 2y = 0$$
    is
    \vspace{0.25cm}
    $$y = C_1 e^x + C_2 e^{2x}$$\\[0.2cm]
    \end{itemize}
\end{block}
\end{frame}
\begin{frame}{\emph{\textcolor{yellow}{{Remaining parts of Question 5}}}}
\begin{block}{}
\begin{itemize}
  \item The \emph{Fermat number} $F_n$ is defined as
```

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```
\begin{block}{}
\begin{itemize}
  \item The \emph{Fermat number} $F_n$ is defined as
    $$F_n = 2^{2^{n}}, \quad n \geq 0.$$\\[0.2cm]
    \end{itemize}
    \end{block}
\end{frame}
\begin{frame}{\emph{\textcolor{yellow}{Question 6. Make the following equations. Notice the large delimiters.}}}
\begin{block}{}
    \begin{itemize}
        \item $$\frac{d}{dx} \left(\frac{x}{x+1}\right) = \frac{1}{(x+1)^2}$$\\[0.2cm]
    \end{itemize}
\end{block}
   \begin{block}{}
       \begin{itemize}
             \item $$\lim_{n \rightarrow \infty} \left(1+\frac{1}{n}\right)^n=e$$\\[0.2cm]
       \end{itemize}
   \end{block}
   \begin{block}{}
   \begin{itemize}
        \item $$\left|\begin{array}{cc}
          a  &  b\\
         c   & d
       \end{array}\right|
       = ad-bc$$\\[0.2cm]
   \end{itemize}
   \end{block}
   \end{frame}
   \begin{frame}{\emph{\textcolor{yellow}{{Remaining parts of Question 6}}}}
   \begin{block}{}
  \begin{itemize}
        \item $$R_\theta = \left[\begin{array}{cc}
          \cos \theta  & -\sin \theta \\
         \sin\theta   & \cos \theta
       \end{array}\right]$$\\[0.2cm]
   \end{itemize}
```

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    \end{array}\right]$$\\[0.2cm]
\end{itemize}
\end{block}
\begin{block}{}
\begin{itemize}
      \item $$\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}$$\\[0.2cm]
\end{itemize}
\end{block}
\begin{block}{}
\begin{itemize}
      \item $$\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_{22}b_{21} &  a_{21}b_{12}+a_{22}b_{22}
    \end{array}\right]$$\\[0.2cm]
\end{itemize}
\end{block}
\end{frame}
```

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    \end{itemize}
    \end{block}
    \end{frame}
    \begin{frame}{\emph{\textcolor{yellow}{{Remaining parts of Question 6}}}}
    \begin{block}{}
    \begin{itemize}
        \item   $$f(x) = \left\{\begin{array}{lr}
          -x^2,    &  x < 0\\
           x^2,  & 0 \leq x \leq 2\\
           4, & x>2
        \end{array}\right.$$\\[0.2cm]

    \end{itemize}
    \end{block}
    \end{frame}
\begin{frame}{\emph{\textcolor{yellow}{Question 7. {Make the following multi-line equations}}}}
     \begin{block}{\Large{\emph{\underline{Part 1}}}}
    % \begin{itemize}
        \begin{eqnarray*}
             1 + 2 & = & 3 \\[0.3cm]
             4 + 5 + 6 & = & 7 + 8\\[0.3cm]
             9 + 10 + 11 + 12 & = & 13 + 14 + 15\\[0.3cm]
             16 + 17 + 18 + 19 + 20 & = & 21 + 22 + 23 + 24\\[0.3cm]
             25 + 26 + 27 + 28 + 29 + 30 & = & 31 + 32 + 33 + 34 + 35\\[0.3cm]
           \end{eqnarray*}
        %\end{itemize}
     \end{block}
\end{frame}
\begin{frame}{}
     \begin{block}{\Large{\emph{{\underline{Part 2}}}}}
     \begin{eqnarray*}
          (a + b)^2 & = & (a + b)(a + b)  \\[0.3cm]
           & = & (a + b)a + (a + b)b\\[0.3cm]
           & = & a(a + b) + b(a + b)\\[0.3cm]
           & = & a^2 + ab + ba + b^2\\[0.3cm]
           & = & a^2 + ab + ab + b^2\\[0.3cm]
```

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```
        (a + b)^2 & = & (a + b)(a + b)  \\[0.3cm]
         & = & (a + b)a + (a + b)b\\[0.3cm]
         & = & a(a + b) + b(a + b)\\[0.3cm]
         & = & a^2 + ab + ba + b^2\\[0.3cm]
         & = & a^2 + ab + ab + b^2\\[0.3cm]
         & = & a^2 + 2ab + b^2\\[0.3cm]
    \end{eqnarray*}
    \end{block}
    \end{frame}
    \begin{frame}{}
    \begin{block}{\Large{\emph{{\underline{Part 3}}}}}
    \begin{eqnarray*}
        \tan (\alpha + \beta + \gamma) & = & \frac{\tan (\alpha + \beta) + \tan \gamma}{1 - \tan (\alpha + \beta)\tan \gamma}\\[0.3cm]
         & = & \frac{\frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}+ \tan \gamma}{1 - \left(\frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}\right)\tan \gamma}\\[0.3cm]
         & = & \frac{\tan \alpha + \tan \beta + (1 - \tan \alpha \tan \beta)\tan \gamma}{1 - \tan \alpha \tan \beta - (\tan \alpha + \tan \beta)\tan \gamma }\\[0.3cm]
         & = & \frac{\tan \alpha + \tan \beta + \tan \gamma - \tan \alpha \tan \beta \tan \gamma}{1 - \tan \alpha \tan \beta - \tan \alpha \tan \alpha \tan \gamma - \tan \beta \tan \gamma}\\[0.3cm]
         \end{eqnarray*}
    \end{block}
    \end{frame}
    \begin{frame}{}
    \begin{block}{\Large{\emph{\underline{Part 4}}}}
    \begin{eqnarray*}
        \prod_{p} \left(1 - \frac{1}{p^2}\right) & = & \prod_{p} \frac{1}{1 + \frac{1}{p^2}+ \frac{1}{p^4}+ \cdots}\\[0.3cm]
        & = & \left(\prod_{p}\left(1 + \frac{1}{p^2}+ \frac{1}{p^4}+ \cdots \right)\right)^{-1}\\[0.3cm]
        & = & \left(1 + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots \right)^{-1}\\[0.3cm]
        & = & \frac{6}{\pi^{2}}\\[0.3cm]
    \end{eqnarray*}
    \end{block}
\end{frame}
\begin{frame}{}
     \includegraphics[angle=5,width=12cm,height=7.5cm]{tyy.jpg}
\end{frame}
\end{document}
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