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\documentclass{beamer}
\usepackage[utf8]{inputenc}
\usepackage{gensymb}
\usepackage{graphicx}
\title{Assignment-2}
\date{}
\institute{\large{\textcolor{blue}{Mata Sundri College for Women}}\\ \textcolor{blue}{University of Delhi}}
\author{\Large{\textcolor{black}{Name : }{\textcolor{red}{Khushi Jain}}\\ \textcolor{black}{Roll No. : }{\textcolor{red}{MAT/20/90}}\and\\ {\textcolor{black}{University Roll No. : }}{\textcolor{red}{20044563017}}}}
\usetheme{Darmstadt}
\begin{document}
\begin{frame}
\titlepage
\end{frame}
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\begin{frame}{Content of Page 69}
   1. Let $x=(x_1,\ldots,x_n)$, where the $x_i$ are non-negative real numbers. Set\\
   $$M_r(x) = \left(\frac{x_1^r+x_2^r+\cdots+x_n^r}{n}\right)^{1/r} , r \in R \setminus \{0\},$$
   \\
   and
   $$M_0(x) = (x_1x_2\ldots x_n)^{1/n}.$$\\
   We call $M_r(x)$ the $rth$ power mean of $x$.\\
   Claim:
   $$\lim_{r\rightarrow 0}M_r(x) = M_0(x).$$
   \end{frame}
   \begin{frame}{Content of Page 69}
   2. Define
   $$V_n = \left[\begin{array}{ccccc}
    1 & 1 & 1 & \ldots & 1\\
    x_1 & x_2 & x_3 & \ldots & x_n\\
    x_1^2 & x_2^2 & x_3^3 & \ldots & x_n^2\\
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29      \vdots & \vdots & \vdots & \ddots & \vdots\\
30      x_1^{n-1} & x_2^{n-1} & x_3^{n-1} & \ldots & x_n^{n-1}
31    \end{array}\right]$$
32    We call $V_n$ the Vandermonde matrix of order $n$.\\
33    Claim:
34    $$\det V_n = \prod_{1\leq i<j\leq n} (x_j - x_i).$$
35  \end{frame}
36  \begin{frame}{Q4 Make the following equations.}
37  \begin{itemize}
38      \item $$3^3 + 4^3 + 5^3 = 6^3$$\\
39      \item $$\sqrt{100} =10$$\\
40      \item $$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$\\
41      \item $$\sum_{k=1}^n k = \frac {n(n+1)}{2}$$\\
42      \item $$\frac{\pi}{4} = \frac{1}{1} - \frac{1}{3} +\frac{1}{5} -\frac{1}{7} + \frac{1}{9} -
        \frac{1}{11} + \cdots$$\\
43  \end{itemize}
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\end{frame}
\begin{frame}{Remaining parts of Q4}
    \begin{itemize}
        \item $$\cos \theta = \sin(90\degree - \theta)$$\\
        \item $$e^{i \theta} = \cos \theta + i \sin \theta$$\\
        \item $$\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$$\\
        \item $$\lim_{x\rightarrow \infty} \frac{\pi(x)}{x/log x} = 1$$\\
        \item $$\int_{-\infty}^{\infty} e^{-x^2} dx= \sqrt{\pi}$$\\
    \end{itemize}
\end{frame}
\begin{frame}{Q5 Typeset the following sentences.}
    \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 $c + a > b$.\\
        \item The area of a triangle with side lengths $a, b, c$ is given by Heron's formula:\\
        $$A = \sqrt{s(s-a)(s-b)(s-c)},$$\\
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59          where $s$ is the semiperimeter $(a + b + c)/2$.\\
60          \item The volume of a regular tetrahedron of edge length $1$ is $\sqrt{2}/12$.
61          \end{itemize}
62  \end{frame}
63  \begin{frame}{Remaining parts of Q5}
64      \begin{itemize}
65          \item The quadratic equation $ax^2 + bx + c = 0$ has roots\\
66          $$r_1,r_2 = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$
67          \item The derivative of a function $f$, denoted $f'$, is defined by\\
68          $$f'(x) = \lim_{h\rightarrow 0} \frac{f(x + h) - f(x)}{h}.$$\\
69          \item A real-valued function $f$ is $convex$ on an interval $I$ if\\
70          $$f(\lambda x + (1 - \lambda)y) \leq \lambda f(x) + (1 - \lambda)f(y),$$\\
71          for all $x, y \in I$ and $0 \leq \lambda \leq 1.$
72      \end{itemize}
73  \end{frame}
74  \begin{frame}{Remaining parts of Q5}
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    \begin{itemize}
        \item The general solution to the differential equation\\
        $$y'' - 3y' + 2y = 0$$
        is
        $$y = C_1e^x + C_2e^{2x}$$.\\
        \item The Fermat number $F_n$ is defined as\\
        $$F_n = 2^{2^n}, n \geq 0.$$
    \end{itemize}
\end{frame}
\begin{frame}{Q6 Make the following equations. Notice the large delimiters.}
    \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 $$\left|\begin{array}{cc}
            a  & b \\
            c  & d \\
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91          \end{array}\right|=ad - bc$$
92          \item $$R_\theta = \left[\begin{array}{cc}
93            \cos\theta   &  -\sin\theta\\
94             \sin\theta  &  \cos\theta
95          \end{array}\right]$$
96      \end{itemize}
97  \end{frame}
98  \begin{frame}{Remaining parts of Q6}
99  \begin{itemize}
100         \item $$\left|\begin{array}{ccc}
101           \boldsymbol{i}   &  \boldsymbol{j} & \boldsymbol{k}\\
102           a_1   & a_2 & a_3\\
103           b_1 & b_2 & b_3
104         \end{array}\right| = \left|\begin{array}{cc}
105            a_2  & a_3 \\
106            b_2  & b_3
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\end{array}\right|\boldsymbol{i} - \left|\begin{array}{cc}
  a_1   &  a_3\\
   b_1  &  b_3
\end{array}\right|\boldsymbol{j} + \left|\begin{array}{cc}
   a_1  &  a_2\\
   b_1  &  b_2
\end{array}\right|\boldsymbol{k}$$
\item $$\left[\begin{array}{cc}
  a_{11}   & a_{12} \\
   a_{21}  & a_{22}
\end{array}\right]\left[\begin{array}{cc}
  b_{11}   & b_{12} \\
  b_{21}   & b_{22}
\end{array}\right] = \left[\begin{array}{cc}
   a_{11}b_{11} + a_{12}b_{12}  &  a_{11}b_{12} + a_{12}b_{22}\\
   a_{21}b_{11} + a_{22}b{21}  &  a_{21}b_{21} + a_{22}b_{22}
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123         \end{array}\right]$$
124         \item $$ f(x) = \left\{ \begin{array}{lr}
125           -x^2, & x < 0\\
126           x^2, & 0 \leq x \leq 2\\
127           4, &  x > 2
128         \end{array}\right.$$
129   \end{itemize}
130 \end{frame}
131 \begin{frame}{Q7 Make the following multi-line equations.}
132 \begin{eqnarray*}
133       1+2  &  = & 3\\
134       4+5+6  & = & 7+8\\
135       9+10+11+12 & = & 13+14+15\\
136       16+17+18+19+20 & = & 21+22+23+24\\
137       25+26+27+28+29+30 & = & 31+32+33+34+35
138     \end{eqnarray*}
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\end{frame}
\begin{frame}{Remaining parts of Q7}
   \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{frame}
\begin{frame}{Remaining parts of Q7}
    \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
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            \tan\beta}+\tan\gamma}{1-(\frac{\tan\alpha+\tan\beta}{1-\tan\alpha
            \tan\beta})\tan\gamma}\\
154             & = & \frac{\tan\alpha+\tan\beta+(1-\tan\alpha \tan\beta)\tan\gamma}{1-\tan\alpha
            \tan\beta-(\tan\alpha+\tan\beta)\tan\gamma}\\
155             & = & \frac{\tan\alpha+\tan\beta+\tan\gamma-\tan\alpha \tan\beta
            \tan\gamma}{1-\tan\alpha \tan\beta-\tan\alpha \tan\gamma-\tan\beta \tan\gamma}
156         \end{eqnarray*}
157 \end{frame}
158 \begin{frame}{Remaining parts of Q7}
159     \begin{eqnarray*}
160         \prod_{-p} \left(1-\frac{1}{p^2}\right)  & = &  \prod_{p}
            \frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots} \\
161             & = & \left(\prod_{p}\left(1 + \frac{1}{p^2} + \frac{1}{p^4} +
            \cdots\right)\right)^{-1}\\
162             & = & \left(1 + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots\right)^{-1}\\
163             & = & \frac{6}{\pi^2}
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164         \end{eqnarray*}
165 \end{frame}
166 \begin{frame}
167     \includegraphics[width=11cm,height=7cm]{images (1).jpg}
168 \end{frame}
169 \end{document}
```