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main.tex

```
\documentclass{beamer}
\usepackage[utf8]{inputenc}
\title{Assignment 2}
\author{Vanshita Gupta}
\institute{Mata Sundari College\\University Of Delhi\\{MAT/20/115}\\20044563039\\}
\date{}
\usetheme{Berlin}
\begin{document}
   \begin{frame}
      \titlepage
   \end{frame}
   \begin{frame}
   \begin{block}{How to use graphics}
   \begin{enumerate}
      \item  Let $\mathbf{x}=(x_1,\ldots,x_n)$,where the $x_i$ are nonnegative real numbers.
      Set
      \[
      M_r(\mathsbf{x})=\left(\frac{x_1^r+x_2^r+\cdots+x_n^r}{r}\right)^{1/r},
      \;\;\in\mathsbf{R}\setminus\{0\},
      \]
      and
      \[
      M_0(\mathbf{x})=\left(x_1 x_2 \ldots x_n\right)^{1/n}.
      \]
      we call$M_r(\mathbf{x})$ the \emph{$r$th power mean}
      of $\mathbf{x}$
```

File outline

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```
25      we call$M_r(\mathbf{x})$ the \emph{$r$th power mean}
26      of $\mathbf{x}$
27      Claim:
28      \[
29      \lim_{r\rightarrow 0} M_r(\mathbf{x})=M_0(\mathbf{x}).
30      \]
31    \end{enumerate}
32    \end{block}
33    \end{frame}
34  \begin{frame}
35  \begin{itemize}
36    \item Define
37    V_n=
38    \left[
39    \begin{array}{ccccc}
40        1 & 1 & 1 & \ldots &1\\
41        x_1 &x_2 &x-3 & \ldots & x_n\\
42        x_1^2 & x_2^2 & x_3^2 & \ldots & x_n^2\\
43        \vdots & \vdots & \vdots & \ddots & \vdots\\
44        x_1^{n-1} & x_2^{n-1} & x_2^{n-1} & \ldots & x_n^{n-1}
45    \end{array}
46    \right]
47    \]
48    WE call $V_n$ the \emph{Vandermode matrix} of order $n$.
49    Claim:
50    \]
```

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```
48      We call $V_n$ the \emph{Vandermode matrix} of order $n$.
49      Claim:
50      \]
51      \det V_n= \prod_{1 \leq i < j \leq n}(x_j-x_i).
52      \end{frame}
53  \end{itemize}
54  \begin{frame}
55  \begin{block}{Q4 Make the following equation.}
56  \begin{enumerate}
57      \item $$3^3+4^3+5^3=6^3$$
58      \item  $$\sqrt{100}=10$$
59      \item $$(a+b)^3=a^3+3a^2b+3ab^2+b^3$$
60      \item $$\sum_{k=1}^{n}K=n(n+1)/2$$
61      \item  $$\frac{\pi}{4}=\frac{1}{1}-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\frac{1}{9}-\frac{1}{11}+\cdots$$
62  \end{enumerate}
63  \end{block}
64  \end{frame}
65      \begin{frame}
66      \begin{block}{remaining parts}
67          \begin{itemize}
68              \item $$\cos\theta=\sin(90-\theta)$$
69              \item $$e^{i\theta}=\cos\theta+i\sin\theta$$
70              \item $$\lim_{\theta\rightarrow 0} \frac{\sin\theta}{\theta}=1$$
71              \item $$\lim_{x \rightarrow \infty}\frac{\pi(x)}\frac{x}{logx}=1$$
72              \item $$\int^{\infty}_{-\infty} e^{-x^2} dx=\sqrt{\pi}$$
73
74          \end{itemize}
```

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```
74          \end{itemize}
75          \end{block}
76      \end{frame}
77      \begin{frame}
78      \begin{block}{Q5. typset the following sentences.}
79          \begin{itemize}
80              \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 $c+a >b$.
81              \item the area of a triangle with side lenghts \emph{a,b,c} is given by \emph{heron's formula :}
82              $$A=\sqrt{s(s-a)(s-b)(s-c)}$$\\
83              where \emph{s} is the semiperimeter \emph{(a+b+c)/2}.
84              \item the volume of a regular tetrahedron of edge length 1 is $\sqrt{2}/12$.
85              \item the quadratic equation $ax^2+bx+c=0$ has roots\\
86              $$r_1,r_2=\frac{-b \pm\sqrt{b^2-4ac}}{2a}$$
87          \end{itemize}
88          \end{block}
89          \end{frame}
90          \begin{frame}
91          \begin{block}{Q6. make the following equations. notice the large delimiters.}
92          \begin{itemize}
93          \item $$\frac{d}{dx}\left(\frac{x}{x+1}\right)=\frac{1}{(x+)^2}$$
94          \item $$\lim_{n\rightarrow\infty}\left(1+\frac{1}{n}\right)^n=e$$
95          \item $$ \left|\begin{array}{cc}
96          a&b\\
97          c&d\end{array}\right|=ad-bc$$
98          \item $$R_\theta=\left[\begin{array}{cc}
99              \cos\theta&-\sin\theta\\
```

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```
100                \sin\theta&\cos\theta
101                \end{array}\right]$$
102            \end{itemize}
103            \end{block}
104            \end{frame}
105            \begin{frame}
106            \begin{block}{remaining parts of Q6}
107            \begin{itemize}
108                \item $$ \left|\begin{array}{ccc}
109                \textbf{i}&\textbf{j}&\textbf{k}\\
110                a_1&a_2&a_3\\
111                b_1&b_2&b_3
112                \end{array}\right|=\left|\begin{array}{cc}
113                a_2&a_3\\
114                b_2&b_3\end{array}\right|\textbf{i}-\left|\begin{array}{cc}
115                a_1&a_3\\
116                b_1&b_3\end{array}\right|\textbf{j}+\left|\begin{array}{cc}
117                a_1&1_2\\
118                b_1&b_2\end{array}\right|\textbf{k}$$
119            \item $$\left[\begin{array}{cc}
120            a_{11}&a_{12}\\
121            a_{21}&a_{22}\end{array}\right]\left[\begin{array}{cc}
122            b_{11}&b_{12}\\
123                b_{21}&b_{22}\end{array}\right]=\left[\begin{array}{lr}
124    a_{11}b_{11}+a_{12}+b_{21}&a_{11}b_{12}+a_{12}b_{22}\\
125    a_{21}b_{11}+a_{22}+b_{21}&a_{21}b_{12}+a_{22}b_{22}\end{array}\right]$$
```

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```
126         \item $$f(x) = \left\{\begin{array}{lc}-x^2,& x<0\\
127         x^2,& 0\leq x\leq 2\\
128         4,&x>2\end{array}\right.$$
129            \end{itemize}
130         \end{block}
131         \end{frame}
132         \begin{frame}
133         \begin{block}{Q7. make the following multi-line equation.}
134          \begin{eqnarray*}
135          1+2&=&3\\
136          4+5+6&=&7+8\\
137          9+10+11+12&=&13+14+15\\
138          16+17+18+19+20&=&21+22+23+24\\
139          25+26+27+28+29+30&=&31+32+33+34+35
140          \end{eqnarray*}
141         \end{block}
142         \end{frame}
143         \begin{frame}
144         \begin{block}{multi line equations}
145          \begin{eqnarray*}
146           (a+b)^2&=&(a+b)(a+b)\\
147         &=&(a+b)a+(a+b)b\\
148         &=&a(a+b)+b(a+b)\\\
149         &=&a^2+ab+ba+b^2\\
150         &=&a^2+ab+ab+b^2\\
151         &=&a^2+2ab+b^2
```

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```
151             &=&a^2+2ab+b^2
152 \end{eqnarray*}
153             \end{block}
154             \end{frame}
155             \begin{frame}
156             \begin{block}{multi line equations}
157                 \begin{eqnarray*}
158 \tan(\alpha+\beta+\gamma)&=&\frac{\tan(\alpha+\beta)+\tan\gamma}{1-\tan(\alpha+\beta)\tan\gamma}\\
159 &=&\frac{\frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}+\tan\gamma}{1-\frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}\tan\gamma}\\
160 &=&\frac{\tan\alpha+\tan\beta+(1-\tan\alpha\tan\beta)\tan\gamma}{1-\tan\alpha\tan\beta-(\tan\alpha\ +\tan\beta)\tan\gamma}\\
161 &=&\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}
162 \end{eqnarray*}
163             \end{block}
164             \end{frame}
165             \begin{frame}
166             \begin{block}{multi line equations}
167              \begin{eqnarray*}
168     \prod_p\left(1-\frac{1}{p^2}\right)&=&\prod_p\frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+ \cdots}\\
169     &=&\left(\prod_p\left(1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots\right)\right)^{-1}\\
170    &=& \left(1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}\cdots\right)^{-1}\\
171    &=&\frac{6}{\pi^2}
172  \end{eqnarray*}
173             \end{block}
174             \end{frame}
175             \begin{frame}
176               \centering \Huge\emph{\textbf{THANK YOU}}
```

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```
154             \end{frame}
155             \begin{frame}
156             \begin{block}{multi line equations}
157                 \begin{eqnarray*}
158 \tan(\alpha+\beta+\gamma)&=&\frac{\tan(\alpha+\beta)+\tan\gamma}{1-\tan(\alpha+\beta)\tan\gamma}\\
159 &=&\frac{\frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}+\tan\gamma}{1-\frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}\tan\gamma}\\
160 &=&\frac{\tan\alpha+\tan\beta+(1-\tan\alpha\tan\beta)\tan\gamma}{1-\tan\alpha\tan\beta-(\tan\alpha\ +\tan\beta)\tan\gamma}\\
161 &=&\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}
162 \end{eqnarray*}
163             \end{block}
164             \end{frame}
165             \begin{frame}
166             \begin{block}{multi line equations}
167                 \begin{eqnarray*}
168     \prod_p\left(1-\frac{1}{p^2}\right)&=&\prod_p\frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+ \cdots}\\
169     &=&\left(\prod_p\left(1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots\right)\right)^{-1}\\
170     &=& \left(1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}\cdots\right)^{-1}\\
171     &=&\frac{6}{\pi^2}
172  \end{eqnarray*}
173             \end{block}
174             \end{frame}
175             \begin{frame}
176                \centering \Huge\emph{\textbf{THANK YOU}}
177             \end{frame}
178     \end{frame}
179 \end{document}
```

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