

Source

Rich Text

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1 \documentclass{beamer}
2 \usepackage[utf8]{inputenc}
3 \usepackage{graphicx}
4 \usepackage{gensymb}
5 \title{Document}
6 \institute{MATA SUNDRI COLLEGE FOR WOMEN\\ DELHI UNIVERSITY}
7 \author{Ritika Kadyan\\ Roll No.- MAT/20/104\\ University Roll
No.-20044563034}
8 \date{}
9 \usetheme{Warsaw}
10 \begin{document}
11 \begin{frame}
12 \titlepage
13 \end{frame}
14
15 \begin{frame}{Example 9.6}
16 1) Let  $x=(x_1, x_2, \ldots, x_n)$  where the  $x_i$  are non negative real
numbers. Set  $M_r(x)=$ 

$$\left(\frac{x_1^r+x_2^r+\ldots+x_n^r}{n}\right)^{\frac{1}{r}}, r \in \mathbb{R}$$


$$\backslash\{0\},$$
 and  $M_0(x)=(x_1x_2\ldots x_n)^{\frac{1}{n}}$ 
17 We call  $M_r(x)$  the  $r$ th power mean of  $x$ .
18 Claim:  $\lim_{r \rightarrow 0} M_r(x)=M_0(x)$ 
19 \end{frame}
20
21 \begin{frame}
22 2) Define
23 
$$V_n = \begin{bmatrix} 1 & 1 & \ldots & 1 \\ x_1 & x_2 & \ldots & x_n \\ x_1^2 & x_2^2 & \ldots & x_n^2 \\ \vdots & \vdots & \vdots & \vdots \\ x_1^{n-1} & x_2^{n-1} & \ldots & x_n^{n-1} \end{bmatrix}$$

24 1 & 1 & \ldots & 1 \\
25 x_1 & x_2 & \ldots & x_n \\
26 x_1^2 & x_2^2 & \ldots & x_n^2 \\
27 \vdots & \vdots & \vdots & \vdots \\
28 x_1^{n-1} & x_2^{n-1} & \ldots & x_n^{n-1} \\
29 \end{array} \right
30 We call  $V_n$  the Vandermonde matrix of order  $n$ .
31 Claim:  $\det V_n = \prod_{1 \leq i < j \leq n} (x_j - x_i)$ 
32 \end{frame}
33

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34 ▾ \begin{frame}{Q4 Make the following equations.}
35 ▾ \begin{itemize}
36     \item $$ 3^3+4^3+5^3=6^3 $$
37     \item $$ \sqrt{100}=10 $$
38     \item $$ (a+b)^3=a^3+3a^2b+3ab^2+b^3 $$
39     \item $$ \sum_{k=1}^n k=\frac{n(n+1)}{2} $$
40     \item $$ \frac{\pi}{4}=\frac{1}{1}-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\dots $$
41 \end{itemize}
42 \end{frame}
43
44 ▾ \begin{frame}{Q4 Make the following equations.}
45 ▾ \begin{itemize}
46     \item $$ \cos\theta=\sin(90^\circ-\theta) $$
47     \item $$ e^{i\theta}=\cos\theta+i\sin\theta $$
48     \item $$ \lim_{\theta\rightarrow 0}\frac{\sin\theta}{\theta}=1 $$
49     \item $$ \lim_{x\rightarrow\infty}\frac{\pi(x)}{\frac{x}{\log x}}=1 $$
50     \item $$ \int_{-\infty}^{\infty} e^{-x^2} dx=\sqrt{\pi} $$
51 \end{itemize}
52 \end{frame}
53
54 ▾ \begin{frame}{Q5 Typeset the following sequences.}
55 ▾ \begin{itemize}
56     \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  $c+a > b$ 
57     \item The area of triangle with side lengths  $\emph{a,b,c}$  is given
        by  $\emph{Heron's formula:}$ 
58     $$ A=\sqrt{s(s-a)(s-b)(s-c)}, $$
59     where  $s$  is the semi perimeter  $\frac{(a+b+c)}{2}$ 
60     \item The volume of a regular tetrahedron of edge length 1 is
         $\frac{\sqrt{2}}{12}$ 
61     \item The quadratic equation  $ax^2+bx+c=0$  has roots  $r_1, r_2=$ 
 $\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ 
62 \end{itemize}
63 \end{frame}
64
65 ▾ \begin{frame}{Q5 Typeset the following sequences.}
66 ▾ \begin{itemize}
67     \item The  $\emph{derivative}$  of a function  $\emph{f}$ . denoted
 $\emph{f'}$ , is defined by
68     $$ f'(x)=\lim_{h\rightarrow 0} \frac{f(x+h)-f(x)}{h} $$
69     \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  $\emph{x,y} \in I$  and  $0 \leq \lambda \leq 1$ .
70 \end{itemize}
71 \end{frame}
72

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73 ▾ \begin{frame}{Q5 Typeset the following sequences.}
74 ▾ \begin{itemize}
75     \item The general solution to the differential equation
       $$$y''-3y'+2y=0$$$ is
76     $$$y=C_1e^x+ C_2e^{2x}$$$ \item The \emph{Fermat number}  $F_n$ 
       is defined as  $F_n=2^{2^n}$  ,  $n\geq 0$ . $$$
77 \end{itemize}
78 \end{frame}
79
80 ▾ \begin{frame}{Q6 Make the following equations. Notice the large
       delimiters}
81 ▾ \begin{itemize}
82     \item $$$ \frac{d}{dx}\left(\frac{x}{x+1}\right)= \frac{1}{(x+1)^2} $$$
83     \item $$$ \lim_{n\rightarrow\infty} \left(1+\frac{1}{n}\right)^n=e $$$
84     \item $$$ \left| \begin{array}{cc}
85         a&b\\
86         c&d \end{array}\right|=ad-bc $$$
87     \item $$$ R_{\theta} = \left[\begin{array}{cc}
88         \cos\theta &-\sin\theta \\
89         \sin\theta &\cos\theta
90     \end{array}\right] $$$
91 \end{itemize}
92 \end{frame}
93
94 ▾ \begin{frame}{Q6 Make the following equations. Notice the large
       delimiters.}
95 ▾ \begin{itemize}
96     \item $$$\left|\begin{array}{ccc}
97         \textbf{i}&\textbf{j}&\textbf{k}\\
98         a_1&a_2&a_3\\
99         b_1&b_2&b_3
100     \end{array}\right|=\left|\begin{array}{cc}
101         a_2&a_3\\
102         b_2&b_3
103     \end{array}\right| \textbf{i}-\left|\begin{array}{cc}
104         a_1&a_3\\
105         b_1&b_3
106     \end{array}\right| \textbf{j}+\left|\begin{array}{cc}
107         a_1&a_2 \\
108         b_1&b_2
109     \end{array}\right| \textbf{k} $$$
110     \item $$$ \left[\begin{array}{cc}
111         a_{11}&a_{12} \\
112         a_{21}&a_{22}
113     \end{array}\right]\left[\begin{array}{cc}
114         b_{11}&b_{12} \\
115         b_{21}&b_{22}
116     \end{array}\right]=\left[\begin{array}{cc}
117         a_{11}b_{11}+a_{12}b_{12}&a_{11}b_{12}+a_{12}b_{22} \\
118         a_{21}b_{11}+a_{22}b_{21}&a_{21}b_{12}+a_{22}b_{22}
119     \end{array}\right] $$$
120     \item $$$f(x)=\left\{\begin{array}{lr}
121         x^2 ,&0\leq x \leq 2 \\
122         4, &x>2 \end{array}\right. $$$
123 \end{itemize}
124 \end{frame}

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125
126 ▾ \begin{frame}{Q7 Make the following multi line equations. }
127 ▾ \begin{eqnarray*}
128     1+2&=&3\\
129     4+5+6&=&7+8\\
130     9+10+11+12&=&13+14+15\\
131     16+17+18+19+20&=&21+22+23+24\\
132     25+26+27+28+29+30&=&31+32+33+34+35
133 \end{eqnarray*}
134 \end{frame}
135
136 ▾ \begin{frame}{Q7 Make the following multi line equations. }
137 ▾ \begin{eqnarray*}
138     (a+b)^2&=&(a+b)(a+b)\\
139     &=&(a+b)a+(a+b)b\\
140     &=&a(a+b)+b(a+b)\\
141     &=&a^2+ab+ba+b^2\\
142     &=&a^2+ab+ab+b^2\\
143     &=&a^2+2ab+b^2
144 \end{eqnarray*}
145 \end{frame}
146
147 ▾ \begin{frame}{Q7 Make the following multi line equations.}
148 ▾ \begin{eqnarray*}
149     \tan(\alpha + \beta + \gamma)&=& \frac{\tan(\alpha + \beta)+\tan\gamma}{1-\tan(\alpha+\beta)\tan\gamma}\\
150     &=&\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}\\
151     &=&\frac{\tan\alpha+\tan\beta+(1-\tan\alpha\tan\beta)\tan\gamma}{\tan\alpha\tan\beta-(\tan\alpha+\tan\beta)\tan\gamma}\\
152     &=&\frac{\tan\alpha+\tan\beta+\tan\gamma-\tan\alpha\tan\beta\tan\gamma}{1-\tan\alpha\tan\beta-\tan\beta\tan\gamma-\tan\gamma\tan\alpha}
153 \end{eqnarray*}
154 \end{frame}
155
156 ▾ \begin{frame}{Q7 Make the following multi line equations.}
157 ▾ \begin{eqnarray*}
158     \prod_p \left(1-\frac{1}{p^2}\right)&=&\prod_p \frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots}\\
159     &=&\left(\prod_p \left(1+\frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots}\right)\right)^{-1}\\
160     &=&\left(1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+\cdots\right)^{-1}\\
161     &=&\frac{6}{\pi^2}
162 \end{eqnarray*}
163 \end{frame}
164
165 ▾ \begin{center}
166     \includegraphics[width=10cm,height=9cm]{logo.jpg}
167 \end{center}
168 \end{document}

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