



Source

Rich Text

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1 \documentclass{beamer}
2 \usepackage[utf8]{inputenc}
3 \usepackage{xcolor}
4 \title{NAME - SEJAL\\
5 COLLEGE ROLL NO. - MAT/20/107\\}
6 \author{\textbf{UNIVERSITY ROLL NO. - 20044563035}}
7 \date{}
8 \institute{\textbf{MATA SUNDRI COLLEGE FOR WOMEN\\ (UNIVERSITY OF DELHI)}}
9 \usetheme{Berlin}
10 \usecolortheme{beaver}
11 \usepackage{graphicx}
12 \begin{document}
13 \maketitle
14 \section{}
15 \begin{frame}{Example 9.5}
16 \begin{itemize}
17 \item Let  $\mathbf{x}=(x_1, \dots, x_n)$ , where the  $x_i$  are non-negative real numbers. Set
18  $M_r(\mathbf{x})= \left(\frac{x_1^r+\dots+x_n^r}{n}\right)^{1/r}$ ,  $;$   $;$   $r \in \mathbf{R}$ 
19  $\setminus \{0\}$ , and  $M_0(\mathbf{x})= \left(x_1 x_2 \dots x_n\right)^{1/n}$ . We call
20  $M_r(\mathbf{x})$  the  $r$ th power mean of  $\mathbf{x}$ .
21 Claim:  $\lim_{r \rightarrow 0} M_r(\mathbf{x})= M_0(\mathbf{x})$ 
22 \end{itemize}
23 \end{frame}
24 \begin{frame}{Example 9.5}
25 \begin{itemize}
26 \item Define  $V_n=\begin{bmatrix} 1 & 1 & 1 & \dots & 1 \\ x_1 & x_2 & x_3 & \dots & x_n \\ x_1^2 & x_2^2 & x_3^2 & \dots & x_n^2 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ x_1^{n-1} & x_2^{n-1} & x_3^{n-1} & \dots & x_n^{n-1} \end{bmatrix}$ . We call  $V_n$  the Vandermonde matrix of order  $n$ .
27 Claim:  $\det V_n = \prod_{1 \leq i < j \leq n} (x_j - x_i)$ 
28 \end{itemize}
29 \end{frame}
30 \begin{frame}{Question 4. Make the following equations.}
31 \begin{itemize}
32 \item  $3^3+4^3+5^3 = 6^3$ 
33 \item  $\sqrt{100} = 10$ 
34 \item  $(a+b)^3 = a^3+3a^2b+3ab^2+b^3$ 
35 \item  $\sum_{k=1}^n k = \frac{n(n+1)}{2}$ 
36 \item  $\frac{\pi}{4}=\frac{1}{1}-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\frac{1}{9}-\frac{1}{11}+\dots$ 
37 \end{itemize}
38 \end{frame}
39 \begin{frame}
40 \begin{itemize}
41 \item  $\cos \theta = \sin(90^\circ - \theta)$ 
42 \item  $e^{i\theta} = \cos \theta + i \sin \theta$ 
43 \item  $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$ 
44 \item  $\lim_{x \rightarrow \infty} \frac{\pi(x)}{x \log x} = 1$ 
45 \item  $\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi}$ 
46 \end{itemize}
47 \end{frame}

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50 \end{frame}
51 \begin{frame}{Question 5. Typeset the following sentences.}
52 \begin{itemize}
53 \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  $c+a>b$ .\\
54 \item The area of triangle with side lengths  $a$ ,  $b$ ,  $c$  is given by \emph{Heron's formula}:
 $SA=\sqrt{s(s-a)(s-b)(s-c)}$ , where  $s$  is the semiperimeter  $\frac{a+b+c}{2}$ .\\
55 \item The volume of a regular tetrahedron of edge length  $l$  is  $\frac{\sqrt{2}}{12}l^3$ .
56 \item The quadratic equation  $ax^2+bx+c=0$  has roots  $r_1, r_2 = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ 
57 \end{itemize}
58 \end{frame}
59 \begin{itemize}
60 \item The derivative of a function  $f$ , denoted  $f'$ , is defined by  $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h)-f(x)}{h}$ .
61 \item A real-valued function  $f$  is \emph{convex} on an interval  $I$  if  $f(\lambda x + (1-\lambda)y) \leq \lambda f(x) + (1-\lambda)f(y)$ , for all  $x, y \in I$  and  $0 \leq \lambda \leq 1$ .
62 \item The general solution to the differential equation  $y''-3y'+2y=0$  is  $y=C_1e^x+C_2e^{2x}$ .
63 \item The \emph{Fermat number}  $(F_n)$  is defined as  $F_n = 2^{2^n} + 1$ ,  $n \geq 0$ .
64 \end{itemize}
65 \begin{frame}{Question 6. Make the following equations. Notice the large delimiters.}
66 \begin{itemize}
67 \item  $\frac{d}{dx} \left( \frac{x}{x+1} \right) = \frac{1}{(x+1)^2}$ 
68 \item  $\lim_{n \rightarrow \infty} \left( 1 + \frac{1}{n} \right)^n = e$ 
69 \item  $\begin{vmatrix} a & b \\ c & d \end{vmatrix} = ad-bc$ 
70 \item  $R_\theta = \begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$ 
71 \item  $\begin{bmatrix} a_1 & a_2 \\ b_1 & b_2 \end{bmatrix} + \begin{bmatrix} a_3 & a_4 \\ b_3 & b_4 \end{bmatrix} = \begin{bmatrix} a_1+a_3 & a_2+a_4 \\ b_1+b_3 & b_2+b_4 \end{bmatrix}$ 
72 \item  $\begin{bmatrix} a_1 & a_2 \\ b_1 & b_2 \end{bmatrix} \begin{bmatrix} a_3 & a_4 \\ b_3 & b_4 \end{bmatrix} = \begin{bmatrix} a_1a_3+a_2b_3 & a_1a_4+a_2b_4 \\ a_3b_1+a_4b_2 & a_3b_2+a_4b_1 \end{bmatrix}$ 
73 \item  $f(x) = \begin{cases} -x^2, & x < 0 \\ x^2, & 0 \leq x \leq 2 \\ 4, & x > 2 \end{cases}$ 
74 \end{itemize}
75 \end{frame}
76 \begin{frame}
77 \begin{itemize}
78 \item  $\begin{bmatrix} i & j & k \\ a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{bmatrix} = \begin{bmatrix} i & j & k \\ a_2 & a_3 \\ b_2 & b_3 \end{bmatrix} + \begin{bmatrix} i & j & k \\ a_1 & a_2 \\ b_1 & b_2 \end{bmatrix}$ 
79 \item  $\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{bmatrix} = \begin{bmatrix} a_{11}b_{11} + a_{12}b_{21} & a_{11}b_{12} + a_{12}b_{22} \\ a_{21}b_{11} + a_{22}b_{21} & a_{21}b_{12} + a_{22}b_{22} \end{bmatrix}$ 
80 \end{itemize}
81 \end{frame}
82 \begin{frame}
83 \begin{itemize}
84 \item  $f(x) = \begin{cases} -x^2, & x < 0 \\ x^2, & 0 \leq x \leq 2 \\ 4, & x > 2 \end{cases}$ 
85 \end{itemize}
86 \end{frame}
87 \end{frame}

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109 \end{frame}
110 \begin{frame}{Question 7. Make the following multi-line equations.}
111 \begin{block}{Part 1}
112 \begin{align*}
113 1+2 \quad &= \quad 3 \\
114 4+5+6 \quad &= \quad 7+8 \\
115 9+10+11+12 \quad &= \quad 13+14+15 \\
116 16+17+18+19+20 \quad &= \quad 21+22+23+24 \\
117 25+26+27+28+29+30 \quad &= \quad 31+32+33+34+35
118 \end{align*}
119 \end{block}
120 \end{frame}
121 \begin{frame}{Question 7. Make the following multi-line equations.}
122 \begin{block}{Part 2}
123 \begin{align*}
124 (a+b)^2 \quad &= \quad (a+b)(a+b) \\
125 &= \quad (a+b)a + (a+b)b \\
126 &= \quad a(a+b) + b(a+b) \\
127 &= \quad a^2+ab+ba+b^2 \\
128 &= \quad a^2+ab+ab+b^2 \\
129 &= \quad a^2+2ab+b^2
130 \end{align*}
131 \end{block}
132 \end{frame}
133 \begin{frame}{Question 7. Make the following multi-line equations.}
134 \begin{block}{Part 3}
135 \begin{align*}
136 \tan(\alpha+\beta+\gamma) \quad &= \quad \frac{\tan(\alpha+\beta)+\tan\gamma}{1-\tan(\alpha+\beta)\tan\gamma} \\
137 &= \quad \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} \\
138 &= \quad \frac{\tan\alpha+\tan\beta+(1-\tan\alpha\tan\beta)\tan\gamma}{1-\tan\alpha\tan\beta-(\tan\alpha+\tan\beta)\tan\gamma} \\
139 &= \quad \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}
140 \end{align*}
141 \end{block}
142 \end{frame}
143 \begin{frame}{Question 7. Make the following multi-line equations.}
144 \begin{block}{Part 4}
145 \begin{align*}
146 \prod_p \left(1-\frac{1}{p^2}\right) \quad &= \quad \prod_p \frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots} \\
147 &= \quad \left(\prod_p \left(1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots\right)\right)^{-1} \\
148 &= \quad \left(1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+\cdots\right)^{-1} \\
149 &= \quad \frac{6}{\pi^2}
150 \end{align*}
151 \end{block}
152 \end{frame}
153 \begin{frame}
154 \includegraphics[width=11cm,height=8cm]{istockphoto.jpg}
155 \end{frame}
156 \end{document}
157

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