

Beamer 1

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1 \documentclass{beamer}
2 \usepackage[utf8]{inputenc}
3 \usetheme{Antibes}
4 \usecolortheme{spruce}
5 \usepackage{xcolor}
6 \usepackage{graphics}

7

8

9 \title{ASSIGNMENT - 2}
10

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13

14 \date{}
15 \begin{document}
16 \begin{frame}
17 \titlepage
18 \end{frame}
19 \begin{frame}{Example 95: Part 1}
20 1. Let  $x_1, x_2, \dots, x_n$  where the  $x_i$  are non negative real numbers. Set
 $\$M_r(x)=\left(\frac{(x_1^r+x_2^r+\dots+x_n^r)^{\frac{1}{r}}}{n}\right)$ ,  $r \in \mathbf{R}$ 
 $\backslashbackslash\{0\}$ ,  $\$$  and
 $\$ M_\theta(x)=\{(x_1, x_2, \dots, x_n)\}^{\frac{1}{n}}$ 
21 We call  $M_r(x)$  the  $r$ th power mean of  $x$ .\\
22 Claim:  $\lim_{r \rightarrow \infty} M_r(x) = M_\theta(x)$ 
23 \end{frame}
24

25
26 \begin{frame}{Part 2}
27 \item 2. Define
28
29 \[
30 V_n =
31 \left[ \begin{array}{cccc}
32 & & & \\
33 1 & 1 & 1 & \dots & 1 \\
34 x_1 & x_2 & x_3 & \dots & x_n \\
35 x_1^2 & x_2^2 & x_3^2 & \dots & x_n^2 \\
36 & \vdots & \vdots & \ddots & \vdots \\
37 x_1^{n-1} & x_2^{n-1} & x_3^{n-1} & \dots & x_n^{n-1}
38 \end{array} \right]
39 \end{array}
40 \right]
41 \]
42 We call  $V_n$  the Vandermonde matrix of order  $n$ .\\
43
44 Claim:
45 \[
46 \det V_n = \prod_{i < j} (x_j - x_i).
47 \]
48 \end{frame}
49 \begin{frame}{Q4 Make the following equations. Part 1}
50 \begin{itemize}
51 \item  $3^3 + 4^3 + 5^3 = 6^3$ 
52 \item  $\sqrt{100} + 10$ 
53  $(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$ 
54  $\sum_{k=1}^n k = \frac{n(n+1)}{2}$ 
55
56 \item  $\frac{\pi}{4} = \frac{1}{1} - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots$ 
57
58 \end{itemize}
59 \end{frame}
60 \begin{frame}{Part 2}
61 \begin{itemize}
62 \item  $\cos\theta = \sin(90^\circ - \theta)$ 
63  $e^{i\theta} = \cos\theta + i\sin\theta$ 
64  $\lim_{\theta \rightarrow 0} \frac{\sin\theta}{\theta} = 1$ 
65  $\lim_{x \rightarrow \infty} \frac{\pi(x)}{x \log x} = 1$ 
66  $\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi}$ 
67 \end{itemize}
68 \end{frame}
69 \begin{frame}{Q5. Typeset the following sentences}
70 \begin{itemize}
71 \item Positive numbers  $a, b$  and  $c$  are the side lengths of a triangle if and only if  $a+b>c, b+c>a, \text{ and } c+a>b$ .
72 \item The area of a triangle with side lengths  $a, b, c$  is given by Heron's formula:  $A=\sqrt{s(s-a)(s-b)(s-c)}$  Where,  $s$  is the semi-perimeter  $(a+b+c)/2$ 
73 \item The volume of a regular tetrahedron of edge length  $l$  is  $\sqrt{2}/12 l^3$ .
74 \item The quadratic equation  $ax^2+bx+c=0$  had roots  $r_1, r_2 = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ 
75 \end{itemize}
76 \end{frame}

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76 \end{frame}
77 \begin{frame}{Remaining parts of Q5}
78 \begin{itemize}
79   \item The \emph{derivative} of a function  $f$ , denoted  $f'$ , defined by  $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h)-f(x)}{h}$ 
80   \item A real- valued function  $f$  is \emph{convex} on interval  $I$  if  $f''(x) \geq 0$  for all  $x, y \in I$  and  $\lambda \in [0, 1]$ .
81   \item The general solution to the differential equation  $y'' - 3y' + 2y = 0$  is  $y = C_1 e^x + C_2 e^{2x}$ 
82 \end{itemize}
83 \end{frame}
84 \begin{frame}{Make the following equations. Notice the large delimiters.}
85 \begin{itemize}
86   \item  $\frac{d}{dx} \left( \frac{x}{x+1} \right) = \frac{1}{(x+1)^2}$ 
87   \item  $\lim_{n \rightarrow \infty} \left( 1 + \frac{1}{n} \right)^n = e$ 
88   \item 
$$\begin{array}{c} a & b \\ c & d \end{array} = ad - bc$$

89 \end{itemize}
90 \begin{array}{c} a & b \\ c & d \end{array}
91 \begin{array}{c} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{array}
92 \begin{array}{c} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
93 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
94 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
95 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
96 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
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103 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
104 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
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106 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
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120 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
121 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
122 \begin{array}{c} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{array}
123 \end{array}
124 \begin{frame}{Remaining parts of Q6}
125 \begin{itemize}
126   \item 
$$\begin{array}{c} a_1 & a_2 \\ a_2 & a_1 \end{array} = \begin{array}{c} a_1 & a_2 \\ a_2 & a_1 \end{array}$$

127 \end{itemize}
128 \begin{array}{c} a_1 & a_2 \\ a_2 & a_1 \end{array}
129 \begin{array}{c} a_1 & a_2 \\ a_2 & a_1 \end{array}
130 \begin{array}{c} a_1 & a_2 \\ a_2 & a_1 \end{array}
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142 \begin{array}{c} a_1 & a_2 \\ a_2 & a_1 \end{array}
143 \begin{array}{c} a_1 & a_2 \\ a_2 & a_1 \end{array}
144 \end{array}
145 \begin{frame}{Q7 Make the following multi-line equations}
146 \begin{eqnarray*}
147   1+2 & = & 3 \\
148   4+5+6 & = & 7+8 \\
149   9+10+11+12 & = & 13+14+15 \\
150   16+17+18+19+20 & = & 21+22+23+24 \\
151   25+26+27+28+29+30 & = & 31+32+33+34+35
152 \end{eqnarray*}
153 \end{frame}

```

The screenshot shows a LaTeX editor interface with the 'Source' tab selected. The code is as follows:

```
154 * \begin{frame}{Remaining parts of Q7}
155 *   \begin{eqnarray*} \\
156   (a+b)^2 &=& (a+b)(a+b)\\
157   &=& (a+b)a+(a+b)b\\
158   &=& a(a+b)+b(a+b)\\
159   &=& a^2+ab+ba+b^2\\
160   &=& a^2+ab+ab+b^2\\
161   &=& a^2+2ab+b^2
162 \end{eqnarray*}
163 \end{frame}
164 * \begin{frame}{Remaining Parts of Q7}
165 *   \begin{eqnarray*}
166   \tan\left(\alpha+\beta+\gamma\right) &=& \\
167   &=& \frac{\tan\left(\alpha+\beta\right)+\tan\gamma}{1-\tan\left(\alpha+\beta\right)\tan\gamma}\\
168   &=& \frac{\tan\alpha+\tan\beta+\left(1-\tan\alpha\tan\beta\right)\tan\gamma}{1-\tan\alpha\tan\beta-\left(\tan\alpha+\tan\beta\right)\tan\gamma}\\
169   &=& \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}
170 \end{eqnarray*}
171 \end{frame}
172 * \begin{frame}{Remaining Parts of Q7}
173 *   \begin{eqnarray*}
174   &=& \prod_p \left(1 - \frac{1}{p^2}\right) = \prod_p \frac{1 + \frac{1}{p^2} + \frac{1}{p^4} + \dots}{1 - \frac{1}{p^2} - \frac{1}{p^4} - \dots}
175   &=& \left(1 + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \dots\right)^{-1}
176   &=& \left(1 + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \dots\right)^{-1}
177   &=& \frac{6}{\pi^2}
178 \end{eqnarray*}
179 \end{frame}
180 \end{frame}
181 \includegraphics[width=10.5cm, height=7cm]{IMG-20211024-WA0001.jpg}
182 \end{document}
183
```