Assignment-2

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\documentclass{beamer}
\usepackage[utf8]{inputenc}
\usepackage{gensymb}
\usepackage{xcolor}
\usepackage{graphicx}

\title{\huge\emph{{\textcolor{white}{MATA SUNDRI COLLEGE FOR WOMEN\\DELHI UNIVERSITY}}}}
\author{\Large\emph{{\textcolor{white}{Name-Bipasha\\Roll Number- MAT/20/82\\University Roll no.-20044563010}}}}
\date{}
\setbeamertemplate{background}{\includegraphics[width=\paperwidth,height=\paperheight]{aUMu7c.jpg}}
\begin{document}
\maketitle
\begin{frame}{\textcolor{white}{QUES ON PAGE 69}}
1) Let $x=(x_1,x_2,\cdots,x_n)$ where the $x_i$ are non negative real numbers. Set $M_r(x)=\left(\frac{(x_1^r+x_2^r+\cdots+x_n^r)}{n}\right)^\frac{1}{r},r\in R \backslash{0},$\\
and
\[M_0(x)={(x_1x_2\cdots x_n)}^\frac{1}{n}\]\\
We call $M_r(x)$ the \emph{rth power mean} of $x$.\\
Claim:
$$ \lim_{r\rightarrow 0}M_r(x)=M_0(x)$$
\end{frame}

\begin{frame}{\textcolor{white}{QUES ON PAGE 69}}
2) Define:
$v_n=\left[\begin{array}{ccccc}
1&1&1 &\cdots &1\\
x_1&x_2&x_3 &\cdots &x_n\\
x_1^2&x_2^2&x_3^2 &\cdots &x_n^2\\
\vdots&\vdots&\vdots&\ddots&\vdots \\
x_1^{n-1}&x_2^{n-1}&x_3^{n-1}&\cdots&x_n^{n-1}\\
\end{array}\right]$

\end{frame}

\begin{frame}{\textcolor{white}{4. Make the following equations.}}
\begin{itemize}
\item$$3^3+4^3+5^3=6^3$$\\
\item$$\sqrt{100}=10$$\\
\item$$(a+b)^3=a^3+3a^2b+3ab^2+b^3$$\\
\item$$\sum^{n}_{k=1}=\frac{n(n+1)}{2}$$\\
\item$$\frac{\pi}{4}=\frac{1}{1}-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\cdots$$\\

\end{itemize}

\end{frame}
\begin{frame}{\textcolor{white}{4. Make the following equations.}}
\begin{itemize}
\item $$\cos\theta=\sin(90^{\circ}-\theta)$$
\item $$e^{i\theta}=\cos\theta+i\sin\theta$$
\item $$\lim_{\theta\rightarrow 0}\frac{\sin\theta}{\theta}=1$$
\item $$\lim_{x\rightarrow \infty}\frac{\pi(x)}{\frac{x}{x\log x}}=1$$
\item $$\int^{\infty}_{-\infty} e^{-x^2}dx=\sqrt{\pi}$$
\end{itemize}
\end{frame}

\begin{frame}{\textcolor{white}{5. Typeset the following sequences.}}
\begin{itemize}
    \item Positive numbers a,b and c are the side lenghts of a triangle if and only if $a+b > c,b+c >a$ , and $c+a >b.$
    \item The area of triangle with side lengths \emph{a,b,c} is given by \emph{Heron's formula:}
    \[A=\sqrt{s(s-a)(s-b)(s-c)},\] where s is the semi perimeter $\frac{(a+b+c)}{2}.$
    \item The volume of a regular tetrahedron of edge length 1 is $\frac{\sqrt{2}}{12}.$
    \item The quadratic equation $ax^2+bx+c=0$ has roots \[r_1.r_2=\frac{-b\pm \sqrt{b^2-4ac}}{2a}.\]
\end{itemize}
\end{frame}

\begin{frame}{\textcolor{white}{5. Typeset the following sequences.}}
\begin{itemize}
\item  The \emph{derivative} of a function \emph{f},denoted \emph{f'}, is defined by \[f'(x)=\lim_{h\rightarrow 0} \frac{f(x+h)-f(x)}{h}\]
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\item A real valued function \emph{f} is \emph{convex} on an interval \emph{I} if \[f(\lambda x+(1-\lambda)y) \leq \lambda f(x)+(1-\lamda)f(y),\] for all \emph{x,y} $\in$ I and $0 \leq \lambda \leq 1.$
\item The general solution to the differential equation \[y"-3y'+2y=0\] is \[y=C_1e^x+C_2e^{2x}\]
\item The \emph{Fermat number} $F_n$ is defined as \[F_n=2^{2^n} , n \geq 0.\]
\end{itemize}
\end{frame}

\begin{frame}{\textcolor{white}{6. 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 $$\left|\begin{array}{cc}
    a&b\\
    c&d
    \end{array}\right|=ad-bc$$

    \item $$ R_\theta = \left[\begin{array}{cc}
    \cos\theta & -\sin\theta \\
    \sin\theta & \cos\theta
    \end{array}\right]$$
\end{itemize}
\end{frame}

\begin{frame}{\textcolor{white}{6. Make the following equations. Notice the large delimiters.}}
    \begin{itemize}
        \item $\left|\begin{array}{ccc}
        \textbf{i}&\textbf{j}&\textbg{k}\\
        a_1&a_2&a_3\\
        b_1&b_2&b_3\\
        \end{array}\right|=\left|\begin{array}{cc}
        a_2&a_3\\
        b_2&b_3
        \end{array}\right|\textbf{i}-\left|\begin{array}{cc}
        a_1&a_3\\
        b_1&b_3
        \end{array}\right|\textbf{j}+\left|\begin{array}{cc}
        a_1&a_2\\
    b_1&b_2
    \end{array}\right|\textbf{k}$

    \item $f(x)=\left\{\begin{array}{lr}-x^2, & x<0\\
    x^2, & 0\leq x \leq 2 \\
    4, & x>2 \end{array}\right .$
    \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_{12}+a_{22}b_{22}
    \end{array}\right]$
    \end{itemize}
\end{frame}

\begin{frame}{\textcolor{white}{7. Make the following multi-line equations.}}
\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}{\textcolor{white}{7. Make the following multi-line equations}}
\begin{eqnarray*}
\tan(\alpha+\beta+\gamma)&=&\frac{\tan(\alpha+\beta)+\tan\gamma}{1-\tan(\alpha+\beta)\tan\gamma}
\\
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\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\tan\beta}+\tan\gamma}{1-(\frac{\tan\alpha+\tan
\beta}{1-\tan\alpha\tan\beta})\tan\gamma}\\
&=&\frac{\tan\alpha+\tan\beta+(1-\tan\alpha\tan\beta)\tan\gamma}{1-\tan\alpha\tan\beta-(\tan\alp
ha+\tan\beta)\tan\gamma}\\
&=&\frac{\tan\alpha+\tan\beta+\tan\gamma-\tan\alpha\tan\beta\tan\gamma}{1-\tan\alpha\tan\beta-\t
an\alpha\tan\gamma-\tan\beta\tan\gamma}
\end{eqnarray*}

\end{frame}

\begin{frame}{\textcolor{white}{7. Make the following multi-line equations.}}
\begin{eqnarray*}
\prod_p\left(1-\frac{1}{p^2}\right)&=&\prod_p\frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots}\\
&=&\left(\prod_p\left(1+\frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots}\right)\right)^{-1}\\
&=&\left(1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+\cdots\right)^{-1}\\
&=&\frac{6}{\pi^2}
\end{eqnarray*}

\end{frame}

\begin{frame}{\textcolor{white}{7. Make the following multi-line equations.}}
\begin{eqnarray*}
1+2&=&3\\
4+5+6&=&7+8\\
9+10+11+12&=&13+13+14+15\\
16+17+18+19+20&=&21+22+23+24\\
25+26+27+28+29+30&=&31+32+33+34+35
\end{eqnarray*}

\end{frame}
\begin{frame}
\begin{center}
\Huge\textcolor{white}{THANK YOU :)}
\end{center}

\end{frame}
\end{document}
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