```latex
\documentclass{beamer}
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage{graphicx}
\title{Assignment-2}
\author{\emph{Kanupriya Kuntal}}
\date{}
\institute{\color{olive}\textbf{\huge{Mata Sundri Collage}}\\ \underline{\textbf{\huge{University of Delhi}}}}
\usepackage{xcolor}
\usetheme{Berkeley}
\usecolortheme{wolverine}
\begin{document}
{\setbeamercolor{background canvas}{bg=green!20}
\begin{frame}
\titlepage
\begin{center}
\color{magenta}{\textbf{\LARGE{Collage Roll no. - MAT/20/23}}\\
\textbf{\LARGE{University Roll no. - 20044563001}}}
\end{center}
\end{frame}}
{\setbeamercolor{background canvas}{bg=red!60}
\begin{frame}{\textbf{Page-69}}
1.Let x= $(x_1,\ldots,x_n)$, where the $x_i$ are non negative real numbers. \\Set $$M_r(x)=\left(\frac{x_1^r+x_2^r+\cdots+x_n^r}{n}\right)^{1/r}, r \in R \backslash \{0\}, $$ and $$M_0(x)=(x_1x_2\ldots x_n)^{1/n}. $$
We call $M_r(x)$ \emph{rth power mean of x.} \\
\vspace{0.2in}
Claim : $$\lim_{r\rightarrow 0} M_r(x)=M_0(x). $$
\end{frame}}
{\setbeamercolor{background canvas}{bg=pink!50}
\begin{frame}{\textbf{Page-69}}
2. Define
$$V_n=\left[\begin{array}{ccccc}
1&1&1&\ldots&1\\
x_1&x_2&x_3&\ldots&x_n\\
x_1^2&x_2^2&x_3^2&\ldots&x_n^2\\
\vdots&\vdots&\vdots&\ddots&\vdots\\
x_1^{n-1}&x_2^{n-1}&x_3^{n-1}&\ldots&x_n^{n-1}
\end{array}\right]$$
We call $V_n$ the \emph{Vandermonde matrix} of order \emph{n}.\\
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Claim :

$$\det V_n=\prod_{1\leq i<j\leq n}(x_j-x_i).$$
\end{frame}}
{\setbeamercolor{background canvas}{bg=orange!100}
\begin{frame}{\textbf{Question-4}}
  \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 $$\sum^{n}_{k=1} k=\frac{n(n+1)}{2}$$
    \item $$\frac{\pi}{4}=\frac{1}{1}-\frac{1}{3}+\frac{1}{5
    }-\frac{1}{7}+\frac{1}{9}-\frac{1}{11}+\cdots$$
  \end{itemize}
\end{frame}}
{\setbeamercolor{background canvas}{bg=blue!50}
\begin{frame}{\textbf{Question-4}}
\begin{itemize}
    \item $$\cos\theta=\sin(90 -\theta)$$
    \item $$e^{i\theta}=\cos\theta + i\sin\theta$$
    \item $$\lim_{\theta \rightarrow 0}
    \frac{\sin\theta}{\theta}=1$$
    \item $$\lim_{x \rightarrow \infty} \frac{\pi(x)}{x/\log
    x}=1$$
    \item $$\int^{\infty}_{-\infty} e^{-x^2} dx=\sqrt{\pi}$$
\end{itemize}
\end{frame}}
{\setbeamercolor{background canvas}{bg=magenta!40}
\begin{frame}{\textbf{Question-5}}
\begin{itemize}
    \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 $c+a
    >b$.
    \item The area of a 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 \emph{s} is the semi-perimeter \emph{(a+b+c)/2}.
    \item The volume of a regular tetrahedron of edge length
    1 is $\sqrt{2}/12$.
    \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}}
{\setbeamercolor{background canvas}{bg=brown!50}
\begin{frame}{\textbf{Question-5}}
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Assignment-2

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{\setbeamercolor{background canvas}{bg=brown!50}
\begin{frame}{\textbf{Question-5}}
    \begin{itemize}
    \item The \emph{derivative} of a function \emph{f} ,
    denoted $f'$ , is defined by
    \\$$f'(x)=\lim_{h\rightarrow 0} \frac{f(x+h)-f(x)}{h}$$
    \item A real- valued function \emph{f} is \emph{convex}
    on interval \emph{I} if\\ $$f(\lambda
    x+(1-\lambda)y)\leq\lambda f(x)+(1-\lambda)f(y)$$, for
    all \emph{x,y} $\in$ \emph{I} and $0 \leq\lambda\leq1$.
    \item The general solution to the differential equation
    $$y"-3y'+2y=0$$
    is $$y=C_1 e^x+C_2 e^{2x}$$
    \item The \emph{Fermat number} $F_n$ is defined as
    $$F_n=2^{2^n}, n\geq0$$ .
\end{itemize}
\end{frame}}
{\setbeamercolor{background canvas}{bg=green!20}
\begin{frame}{\textbf{Question-6}}
 \begin{itemize}
     \item $$\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]$$
 \end{itemize}
\end{frame}}
{\setbeamercolor{background canvas}{bg=cyan!100}
\begin{frame}{\textbf{Question-6}}
\begin{itemize}
    \item $$ \left|\begin{array}{ccc}
    \textbf{i}&\textbf{j}&\textbf{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}$$
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\begin{itemize}
    \item $$ \left|\begin{array}{ccc}
    \textbf{i}&\textbf{j}&\textbf{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}$$
    \item $$\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}{lr}
    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{array}\right]$$
    \item $$ f(x)=\left\{\begin{array}{lc}
    -x^2,&x<0 \\
    x^2 ,&0\leq x\leq2 \\
    4,&x>2
    \end{array}\right.$$
 \end{itemize}
\end{frame}}
{\setbeamercolor{background canvas}{bg=pink!100}
\begin{frame}{\textbf{Question-7(i)}}
$$ 1+2=3$$\\
$$4+5+6=7+8$$\\
$$9+10+11+12=13+14+15$$\\
$$16+17+18+19+20=21+22+23+24$$\\
$$25+26+27+28+29+30=31+32+33+34+35$$
\end{frame}}
{\setbeamercolor{background canvas}{bg=violet!50}
\begin{frame}{\textbf{Question-7(ii)}}
\begin{eqnarray}
(a+b)^2&=&(a+b)(a+b)\nonumber\\
&=&(a+b)a+(a+b)b\nonumber\\
&=&a(a+b)+b(a+b)\nonumber\\
&=&a^2+ab+ba+b^2\nonumber\\
&=&a^2+ab+ab+b^2\nonumber\\
&=&a^2+2ab+b^2\nonumber
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&=&a^2+ab+ba+b^2\nonumber\\
&=&a^2+ab+ab+b^2\nonumber\\
&=&a^2+2ab+b^2\nonumber
\end{eqnarray}
\end{frame}}
{\setbeamercolor{background canvas}{bg=teal!100}
\begin{frame}{\textbf{Question-7(iii)}}
\begin{eqnarray}
\tan(\alpha +\beta +\gamma)&=&\frac{\tan(\alpha
+\beta)+\tan\gamma}{1-\tan(\alpha
+\beta)\tan\gamma}\nonumber\\
&=&\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}\nonumber\\
&=&\frac{\tan\alpha +\tan\beta +(1-\tan\alpha
\tan\beta)\tan\gamma}{1-\tan\alpha \tan\beta
-(\tan\alpha+\tan\beta)\tan\gamma}\nonumber\\
&=&\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}\nonumber
\end{eqnarray}
\end{frame}}
{\setbeamercolor{background canvas}{bg=olive!100}
\begin{frame}{\textbf{Question-7(iv)}}
\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}\nonumber\\
&=&{\left(\prod_{p}
\left(1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots \right)
\right)}^{-1}\nonumber\\
&=&{\left( 1+\frac{1}{2^2}+\frac{1}{2^4}+\cdots
\right)}^{-1}\nonumber\\
&=&\frac{6}{\pi ^2}\nonumber
\end{eqnarray}
\end{frame}}
\setbeamercolor{background canvas}{bg=red!50}
\begin{frame}{}
\centering \color{teal}{\textbf{\Huge{THANK YOU}}}
\end{frame}
\end{document}
```