```
\documentclass{beamer}
\usepackage[utf8]{inputenc}
\usepackage{xcolor}
\usepackage{tikz}
\usetikzlibrary{calc}
\usepackage{fancybox}
\date{}
%\maketitle
\usetheme{Madrid}
\definecolor{pbgray}{HTML}{575757}%
background color for the progress bar
\makeatletter
\def\progressbar@progressbar{} % the
progress bar
\newcount\progressbar@tmpcounta% auxiliary
counter
\newcount\progressbar@tmpcountb% auxiliary
counter
\newdimen\progressbar@pbht %progressbar
height
\newdimen\progressbar@pbwd %progressbar
width
\newdimen\progressbar@tmpdim % auxiliary
dimension

\progressbar@pbwd=\linewidth
\progressbar@pbht=1pt

% the progress bar
\def\progressbar@progressbar{%


\progressbar@tmpcounta=\insertframenumber

\progressbar@tmpcountb=\inserttotalframenu
mber
    \progressbar@tmpdim=\progressbar@pbwd
    \multiply\progressbar@tmpdim by
\progressbar@tmpcounta
    \divide\progressbar@tmpdim by
```

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    \progressbar@tmpdim=\progressbar@pbwd
    \multiply\progressbar@tmpdim by
\progressbar@tmpcounta
    \divide\progressbar@tmpdim by
\progressbar@tmpcountb

  \begin{tikzpicture}[very thin]
    \draw[pbgray!30,line
width=\progressbar@pbht]
      (0pt, 0pt) -- ++
(\progressbar@pbwd,0pt);
    \draw[draw=none]
(\progressbar@pbwd,0pt) -- ++ (2pt,0pt);

    \draw[fill=pbgray!30,draw=pbgray] %
       ( $ (\progressbar@tmpdim,
\progressbar@pbht) + (0,1.5pt) $ ) -- ++
(60:3pt) -- ++(180:3pt) ;

    \node[draw=pbgray!30,text
width=3.5em,align=center,inner sep=1pt,
      text=pbgray!70,anchor=east] at (0,0)
{\insertframenumber/\inserttotalframenumbe
r};
  \end{tikzpicture}%
}

\addtobeamertemplate{headline}{}
{%
  \begin{beamercolorbox}
[wd=\paperwidth,ht=5ex,center,dp=1ex]
{white}%
    \progressbar@progressbar%
  \end{beamercolorbox}%
}
\makeatother
\begin{document}

\begin{frame}{ASSIGNMENT-2}
 \begin{block}
 {MATA SUNDRI COLLEGE FOR WOMEN}
   \centering
   {\(\mathcal{NAME}\) :-SHRISHTI KANSAL\\
     \(\mathcal{COLLEGE}\) \
```

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(\mathcal{ROLLNO}\)    :-MAT/20/86\\
    \(\mathcal{UNIVERSITY}\) \
(\mathcal{ROLLNO}\) :-20044563020\\
     \(\mathcal{UNIVERSITY}\) \
(\mathcal{NAME}\):-DELHI UNIVERSITY\\}
 \end{block}
\end{frame}
\begin{itemize}
\begin{frame}
    \item Let $\mathbf{x}=
(x_1,\ldots,x_n)$,
where the $x_i$ are non-negative real
numbers .
Set
\[
M_r(\mathbf{x})=\left(\frac{x_1^r+x_2^r+\c
dots+x_n^r}{n}\right)^{1/r}, \; \; r \in
\mathbf{R} \setminus \{0\},
\]
and
\[M_0(\mathbf{x})=\left(x_1 x_2 \ldots x_n
\right)^{1/n}\]
we call $M_r(\mathbf{x})$ the \emph{$r$th
power mean} of $\mathbf{x}$

Claim:
\[
\lim_{r \rightarrow 0} M_r(\mathbf{x}) =
M_0(\mathbf{x}).
\]
\end{frame}
\begin{frame}
\item Define
\[V_n=\left[\begin{array}{ccccc}
1 & 1 & 1 & \ldots & 1\\
x_1 & x_2 & x_3 & \ldots & x_n^2\\
\vdots & \vdots & \vdots &\ddots & \vdots
\\
x_1^{n-1} & x_2^{n-1} & x_3^{n-1} & \ldots
& x_n^{n-1}
\end{array}
\right].
\]
we call $V_n$ the \emph{Vandermonde
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\]
we call $V_n$ the \emph{Vandermonde
matrix} of order $n$ .
Claim:
\[
\det V_n =\prod_{1 \leq i< j \leq n}(x_j-
x_i).
\]
\end{frame}
\end{itemize}
\begin{frame}{Question - 4 (EQUATIONS)}
\begin{eqnarray*}
     {3^3+4^3+5^3=6^3}\\
     {\sqrt{100}=10}\\
    {(a+b)^3=a^3+3a^2b+3ab^2+b^3}\\
    \sum_{k=1}^n k=\frac{n(n+1)}{2}\\
     \frac{\pi}{4}= \frac{1}{1}-\frac{1}
{3}+\frac{1}{5}-\frac {1}{7}+\frac{1}{9}-
\frac{1}{11}+\cdots\\
     Cos\theta =Sin(90-\theta)\\
      e^{i\theta}=Cos\theta+iSin\theta\\
     \lim_{\theta\rightarrow
0}\frac{Sin\theta}{\theta}=1
\end{eqnarray*}
\end{frame}
\begin{frame}
\begin{eqnarray*}

\shadowbox{$\lim_{x\rightarrow\infty}\frac
{\pi(x)}{x/log(x)}=1$}\\
    \shadowbox{$\int_{-\infty}^\infty e^{-
x^2}dx=\sqrt{\pi}$}
\end{eqnarray*}
\end{frame}
\begin{frame}{Question -5 (statements)}
\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 , c+a>b$\\
    \item The area of a triangle with side
lengths a,b,c is given by \emph{Heron'S
formula}:
    \[\mathbf{A}=\sqrt{s(s-a)(s-b)(s-
c)},\]
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c)},\]
    where \emph{s} is the semiperimeter
(a+b+c)/2.
    \item The volume of a regular
tetrahedron of edge length 1 is
$\sqrt{2}/12$.\\
    \end{itemize}
    \end{frame}
\begin{frame}
\begin{itemize}
    \item The quadratic equation
$ax^2+bx+c=0$ has roots \[ r_1,r_2=\frac{-
b\pm\sqrt{b^2-4ac}}{2a}\]\\
    \item The derivative of a function
\emph{f},denoted \emph{f'},is defined by
,\[f'(x)=\lim_{h\rightarrow
0}\frac{f(x+h)-f(x)}{h}\]
    \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 $x , y \in
I $ and $0 \leq \lambda \leq 1$.
    \end{itemize}
\end{frame}
\begin{frame}
\begin{itemize}
    \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 Fn is
defined as $$ Fn=2^{2^n} ,n\geq 0 $$
    \end{itemize}
\end{frame}
\begin{frame}{Question - 6 (EQUATIONS)}
  \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
      \[\begin{vmatrix}
      a & b\\
```

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      \[\begin{vmatrix}
      a & b\\
      c & d
      \end{vmatrix}= ad-bc\]
     \item \[R_\theta = \begin{bmatrix}
\cos\theta  &  -\sin\theta \\ \sin\theta &
\cos\theta \end{bmatrix}\]
      \item \[\begin{vmatrix}
      i   & j   & k \\
      a_1 & a_2 & a_3\\
      b_1 & b_2 & b_3
      \end{vmatrix}=
      \begin{vmatrix}
      a_2 & a_3\\
       b_2 & b_3
      \end{vmatrix}\textbf{i}-
\begin{vmatrix}
       a_1 & a_3\\
       b_1 & b_3

\end{vmatrix}\textbf{j}+\begin{vmatrix}
       a_1 & a_2\\
       b_1 & b_2
      \end{vmatrix}\textbf{k}\]
 \end{itemize}
\end{frame}
\begin{frame}
 \begin{itemize}
     \item \[\begin{bmatrix} a_{11} &
a_{12}\\a_{21} & a_{22} \end{bmatrix}
\begin{bmatrix} b_{11} & b_{12}\\ b_{21} &
b_{22} \end{bmatrix} = \begin{bmatrix}
a_{11} b_{11} +a_{12} b_{21} &
a_{11}b_{12} +a_{12} b_{22}\\ a_{21}
b_{11} +a_{22} b_{21} & a_{21} b_{12}
+a_{22} b_{22}\end{bmatrix}\]
      \item \[f(x)=\begin{cases}-x^2, & x
< 0\\x^2 ,& 0\le x \le 2\\  4, & x >
2\end{cases}\]
\end{itemize}
\end{frame}
\begin{frame}{Question -7 (MULTI-LINE
EQUATIONS)}
\begin{block}{1st part}
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EQUATIONS}}
\begin{block}{1st part}
 {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{block}
\end{frame}
\begin{frame}
\begin{block}{2nd part}
{\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{block}
\end{frame}
 \begin{frame}
 \begin{block}{3rd part}
 {$tan(\alpha +\beta
+\gamma)$=$\frac{tan(\alpha+\beta)+tan\gam
ma}{1-tan(\alpha+\beta)tan\gamma}$}\\
 =\[\frac{\frac{tan\alpha+tan\beta}{1-
tan\alpha tan\beta}+tan\gamma}{1-
(\frac{tan\alpha+tan\beta}{1-tan\alpha
tan\beta})tan\gamma}\]\\
 =\[\frac{tan\alpha+tan\beta+(1-tan\alpha
tan\beta)tan\gamma }{1-tan\alpha tan\beta-
(tan\alpha+tan\beta)tan\gamma}\]\\
 =\[\frac{tan\alpha+tan\beta+tan\gamma-
tan\alpha tan\beta tan\gamma}{1-tan\alpha
tan\beta -tan\alpha tan\gamma -tan \beta
tan\gamma}\]
 \end{block}
 \end{frame}
 \begin{frame}
 \begin{block}{4th part}
 {\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}\\
```

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 \end{eqnarray*}}
\end{block}
\end{frame}
 \begin{frame}
 \begin{block}{3rd part}
 {$tan(\alpha +\beta
+\gamma)$=$\frac{tan(\alpha+\beta)+tan\gam
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 =\[\frac{\frac{tan\alpha+tan\beta}{1-
tan\alpha tan\beta}+tan\gamma}{1-
(\frac{tan\alpha+tan\beta}{1-tan\alpha
tan\beta})tan\gamma}\]\\
 =\[\frac{tan\alpha+tan\beta+(1-tan\alpha
tan\beta)tan\gamma }{1-tan\alpha tan\beta-
(tan\alpha+tan\beta)tan\gamma}\]\\
 =\[\frac{tan\alpha+tan\beta+tan\gamma-
tan\alpha tan\beta tan\gamma}{1-tan\alpha
tan\beta -tan\alpha tan\gamma -tan \beta
tan\gamma}\]
 \end{block}
 \end{frame}
 \begin{frame}
 \begin{block}{4th part}
 {\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(\left(\prod_p(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{block}
\end{frame}
 \begin{frame}
 \tikz[remember picture,overlay]
\node[opacity=2.5,inner sep=0pt] at
(current page.center)
{\includegraphics[width=\paperwidth,height
=\paperheight]{background .png}};
 \end{frame}
\end{document}
```