exercise - Online LaTeX Editor Ov | ASSIGNMENT 2

overleaf.com/project/615b19c0c1494c6e999a6c71

Menu | exercise | Review | Share | Submit | History | Chat

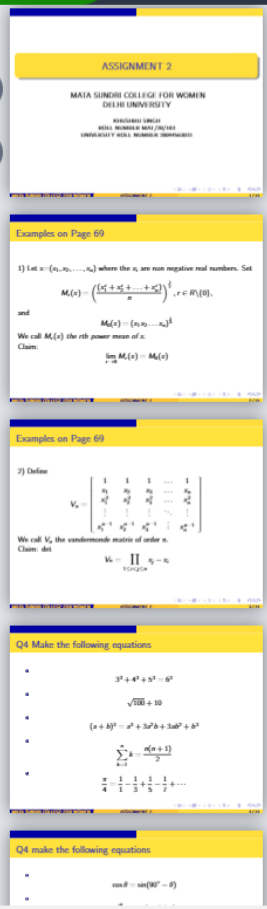
Source | Rich Text

main.tex

File outline

We can't find any sections or subsections in this file.
Find out more about the file outline

```
1  \documentclass{beamer}
2  \usepackage[utf8]{inputenc}
3  \usepackage{gensymb}
4  \usepackage{xcolor}
5  \usepackage{graphicx}
6  \title{ASSIGNMENT 2 }
7  \institute{KHUSHBU SINGH \\ ROLL NUMBER MAT/20/103 \\UNIVERSITY ROLL NUMBER 20044563031}
8  \author{   MATA SUNDRI COLLEGE FOR WOMEN  \\   DELHI UNIVERSITY}
9
10 \date{}
11 \usetheme{AnnArbor}
12
13 \begin{document}
14 \begin{frame}
15 \titlepage
16 \end{frame}
17
18 \begin{frame}{Examples on Page 69}
19 1) Let x=$(x_1,x_2,\ldots,x_n)$ where the $x_i$ are non negative real numbers. Set $$M_r(x) =
   \left(\frac{(x_1^r+x_2^r+\ldots+x_n^r)}{n}\right)^\frac{1}{r},r \in R \backslash\{0\}, $$ and
20 $$ M_0(x)={(x_1x_2\ldots x_n)}^\frac{1}{n} $$ \\
21 We call $M_r(x)$ \emph{the rth power mean of x.}\\
22 Claim: $$\lim_{r\rightarrow 0} M_r(x)=M_0(x)$$
23 \end{frame}
24
25 \begin{frame}{Examples on Page 69}
26 2) Define
27 $$V_n=\left[\begin{array}{ccccc}
```



ENG IN | 23:23 25-10-2021

exercise - Online LaTeX Editor Ov | ASSIGNMENT 2

overleaf.com/project/615b19c0c1494c6e999a6c71

Menu | exercise | Review | Share | Submit | History | Chat

Source | Rich Text

main.tex

```
\begin{frame}{Examples on 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 n.\\
Claim: det $$V_n = \prod_{1\leq i<j \leq n}{x_j-x_i}$$
\end{frame}

\begin{frame}{Q4 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 $$ \sum^{n}_{k=1} k=\frac{n(n+1)}{2}$$
    \item $$ \frac{\pi}{4}=\frac{1}{1}-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\cdots$$
\end{itemize}
\end{frame}

\begin{frame}{Q4 make the following equations}
\begin{itemize}
    \item $$\cos\theta=\sin(90^{\circ}-\theta)$$
    \item $$e^{i\theta}=\cos\theta+i\sin\theta$$
```

File outline

We can't find any sections or subsections in this file.
Find out more about the file outline

ENG IN 23:23 25-10-2021

exercise - Online LaTeX Editor Ov | ASSIGNMENT 2

overleaf.com/project/615b19c0c1494c6e999a6c71

Menu | exercise | Review | Share | Submit | History | Chat

Source | Rich Text

main.tex

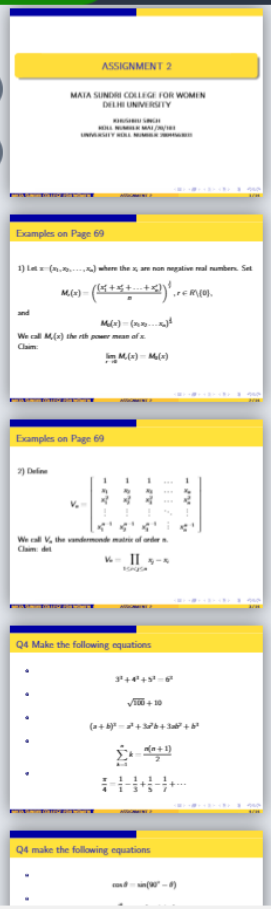
```
\begin{itemize}
    \item $$\cos\theta=\sin(90^{\circ}-\theta)$$
    \item $$e^{i\theta}=\cos\theta+i\sin\theta$$
    \item $$\lim_{\theta\rightarrow 0}\frac{\sin\theta}{\theta}=1$$
    \item $$ \lim_{x\rightarrow\infty}\frac{\pi(x)}{\frac{x}{x \log x}}=1 $$
    \item $$ \int^{\infty}_{-\infty} e^{-x^2}dx=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

\begin{frame}{Q5 Typeset the following sequences.}
    \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 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}{Q5 Typeset the following sequences.}
\begin{itemize}
    \item The \emph{derivative} of a function \emph{f}.denoted \emph{f'} , is defined by
   $$ f'(x)=\lim_{h\rightarrow 0} \frac{f(x+h)-f(x)}{h}$$
   \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 \emph{x,y} $\in$ I and $ 0 \leq \lambda
   \leq 1 . $
```

File outline

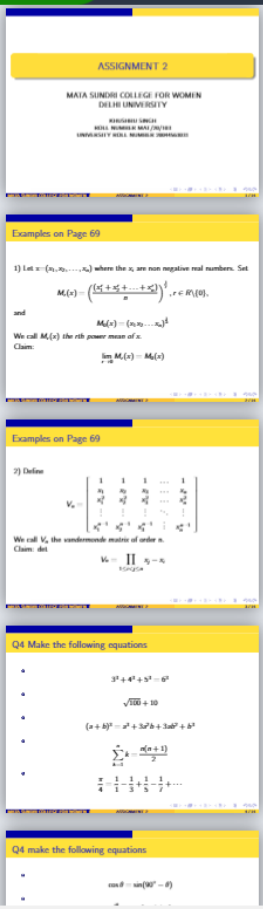
We can't find any sections or subsections in this file.
Find out more about the file outline



ENG IN 23:24 25-10-2021

```
\begin{frame}{Q5 Typeset the following sequences.}
\begin{itemize}
    \item The \emph{derivative} of a function \emph{f}.denoted \emph{f'} , is defined by
   $$ f'(x)=\lim_{h\rightarrow 0} \frac{f(x+h)-f(x)}{h}$$
   \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 \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}{Q6 Make the following 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 $$ \left|\begin{array}{cc}
    a&b\\
    c&d \end{array}\right|=ad-bc $$
    \item $$ R_\theta = \left[\begin{array}{cc}
    \cos\theta &-\sin\theta \\
    \sin\theta & \cos\theta
    \end{array}\right] $$
\end{itemize}
\end{frame}
```



exercise - Online LaTeX Editor Ov | ASSIGNMENT 2

overleaf.com/project/615b19c0c1494c6e999a6c71

Menu | exercise | Review | Share | Submit | History | Chat

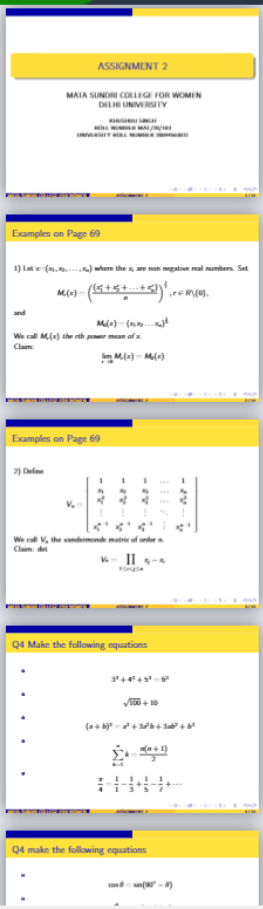
Source | Rich Text

main.tex

File outline

We can't find any sections or subsections in this file.
Find out more about the file outline

```
\begin{frame}{Q6 Make the following equations. }
\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 $$ \left[\begin{array}{cc}
    a_{11}&a_{12} \\
    a_{21}&a_{22}
    \end{array}\right]\left[\begin{array}{cc}
    b_{11}&b_{12}  \\
    b_{21}&b_{22}
    \end{array}\right]=\left[\begin{array}{cc}
    a_{11}b_{11}+a_{12}b_{12}&a_{11}b_{12}+a_{12}b_{22}    \\
    a_{21}b_{11}+a_{22}b_{21}&a_{21}b_{12}+a_{22}b_{22}
    \end{array}\right] $$
    \item $$f(x)=\left\{\begin{array}{lr}-x^2, & x< 0\\
```



ENG IN 23:24 25-10-2021

exercise - Online LaTeX Editor Ov | ASSIGNMENT 2

overleaf.com/project/615b19c0c1494c6e999a6c71

Menu | exercise | Review | Share | Submit | History | Chat

Source | Rich Text

main.tex

```
120     \end{array}\right] $$
121     \item $$f(x)=\left\{\begin{array}{lr}-x^2, & x< 0\\
122     x^2,&0\leq x \leq 2 \\
123     4,&x > 2 \end{array}\right. $$
124 \end{itemize}
125 \end{frame}
126
127 \begin{frame}{Q7. Make the following multi line equations }
128 \begin{eqnarray*}
129     1+2&=&3\\
130     4+5+6&=&7+8\\
131     9+10+11+12&=&13+14+15\\
132     16+17+18+19+20&=&21+22+23+24\\
133     25+26+27+28+29+30&=&31+32+33+34+35
134 \end{eqnarray*}
135 \end{frame}
136
137 \begin{frame}{Q7. Make the following multi line equations }
138 \begin{eqnarray*}
139 (a+b)^2&=&(a+b)(a-b)\\
140 &=&(a+b)a+(a+b)b\\
141 &=&a(a+b)+b(a+b)\\
142 &=&a^2+ab+ba+b^2\\
143 &=&a^2+ab+ab+b^2\\
144 &=&a^2+2ab+b^2
145 \end{eqnarray*}
146 \end{frame}
147
```

File outline

We can't find any sections or subsections in this file.
Find out more about the file outline

ENG IN 23:24 25-10-2021

exercise - Online LaTeX Editor Ov | ASSIGNMENT 2

overleaf.com/project/615b19c0c1494c6e999a6c71

Menu | exercise | Review | Share | Submit | History | Chat

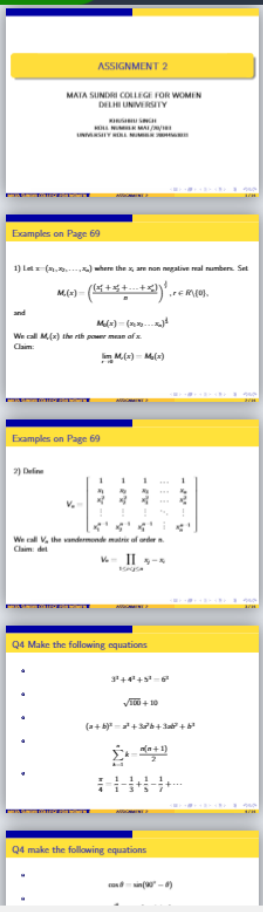
Source | Rich Text

main.tex

File outline

We can't find any sections or subsections in this file.
Find out more about the file outline

```
148 \begin{frame}{Q7. Make the following multi line equations }
149 \begin{eqnarray*}
150 \tan(\alpha+\beta+\gamma)&=&\frac{\tan(\alpha+\beta)+\tan\gamma}{1-\tan(\alpha+\beta)\tan\gamma}\\
151 &=&\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}\\
152 &=&\frac{\tan\alpha+\tan\beta+(1-\tan\alpha\tan\beta)\tan\gamma}{1-\tan\alpha\tan\beta-(\tan\alpha+\tan\beta)\tan\gamma}\\
153 &=&\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}
154 \end{eqnarray*}
155 \end{frame}
156
157 \begin{frame}{Q7. Make the following multi line equations }
158 \begin{eqnarray*}
159 \prod_p\left(1-\frac{1}{p^2}\right)&=&\prod_p\frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots}\\
160 &=&\left(\prod_p\left(1+\frac{1}{1+\frac{1}{p^2}+\frac{1}{p^4}+\cdots}\right)\right)^{-1}\\
161 &=&\left(1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+\cdots\right)^{-1}\\
162 &=&\frac{6}{\pi^2}
163 \end{eqnarray*}
164 \end{frame}
165
166 \begin{frame}
167 \begin{center}
168     \underline\Huge\emph{THANK YOU!}
169 \end{center}
170 \end{frame}
171 \end{document}
```



ENG IN 23:24 25-10-2021