LaTeX Tutorial

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1 Bahman 1391

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Chapter 1

Day 1

This is for test. The aim of this work is to generalize Lomonosov's techniques in order to apply them to a wider class of not necessarily *compact operators*. We start by *establishing* **establishing** ***establishing*** a connection between the subspaces and density of what we define as the associated Lomonosov space in a certain function space. On a This is second line.

1.1 Introduction

This is for test. The aim of this work is to generalize Lomonosov's techniques in order to apply them to a wider class of not necessarily *compact operators*. We start by *establishing* **establishing** ***establishing*** a connection between the subspaces and density of what we define as the associated Lomonosov space in a certain function space. On a **Hilbert** space, approximation approximation approximation approximation approximation approximation approximation with
This is second line.

This is Third line. Let G is a graph. let

$$x^{x^2+21}+1$$

$$x_i - x_{ij}^2 + 2x_{i^2+1} + x_i y_i$$

$$\left\{\frac{\{x^{x^2+21}+1\}}{x_i - x_{ij}^2 + 2x_{i^2+1} + x_i y_i}\right\}$$

$$\left\{\frac{\left\{\frac{x^{x^2+21}+1}{2x}\right\}}{x_i - x_{ij}^2 + 2x_{i^2+1} + x_i y_i}\right\}$$

1.2 Mathematics Formula

$$\sqrt[n]{x^2-2x+1}$$

$$\sqrt[2]{\frac{2x+1}{x-1}}$$

1.2.1 subsection

$$\left(\frac{\frac{1}{\frac{1}{x}}}{\left(\sqrt{\frac{2x}{y}}\right)}\right)$$

$$\sum_{i=1}^{n} x_i$$

$\sum_{i=1}^{\infty} \frac{x_i - 2x^2 - 1}{x-1}$

$$\lim_{\alpha\to\infty} \sin(\alpha)$$

$$\int_a^{x^2} \frac{\sin x}{\sin x + \cos x}$$

$$\bigotimes_{i=1}^{5} x^{i^2} \tag{1.2.1}$$

$$\sum_{i=1}^{n} x_i \tag{1.2.2}$$

$$\lim_{\alpha \to \infty} \sin(\alpha) \tag{1.2.3}$$

$$\int_a^{x^2} \frac{\sin x}{\sin x + \cos x} \tag{1.2.4}$$

$$\sum_{i=1}^{\infty} \frac{x_i - 2x^2 - 1}{x - 1} \tag{1.2.5}$$

$$\bigotimes_{i=1}^{5} x^{i^2}$$

$$\begin{aligned} f(x) &= \sin x + \cos x \\ &\leq 2x + 1 \\ &< x^2 - 1 \\ &= \frac{x^5 + 4x^2}{4}. \end{aligned}$$

$$\begin{aligned} f(x) &= \sin x + \cos x && (1.2.6) \\ &\leq 2x + 1 \\ &< x^2 - 1 && (1.2.7) \\ &= \frac{x^5 + 4x^2}{4}. && (1.2.8) \end{aligned}$$

Based on equation 1.2.5 this is true. is a variable. G x page 3 A. Ahmadi

$$A = \{x | x \text{ is odd or even}\}.$$

Chapter 2

Day 2

2.1 Itemize, enumerate

a) First one

b) Second one

   This is for test. The aim of this work is to generalize Lomonosov's techniques in order to apply them to a wider class of not necessarily

1. First one
2. new one
3. Second one
4. This is for test. The aim of this work is to generalize[1] Lomonosov's techniques[2] in order to apply them to a wider class of not necessarily

[1] A sample of footnote.

[2] Second one.

2.2 array

a	b	c
$\begin{array}{cc} \begin{array}{ccc} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 5 & 4 & 6 \end{array} & 234 \\ \hline 44 & 34 \end{array}$	xxx	yyy
10000	200000	
$\begin{array}{ccc} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 5 & 4 & 6 \end{array}$	x^2	$2x+1$

a	b	c
$\begin{array}{ccc} 1 & 2 & 1 \\ 2 & 3 & \\ 3 & 4 & \end{array}$	xxx	yyy
10000	200000	
10	x^2	$2x+1$

<table>
<tr><th colspan="3">$Name$</th><th>x</th><th>y</th><th colspan="2">age</th><th colspan="2">XXX</th></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>x</td><td>y</td><td></td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>x</td><td>y</td><td rowspan="2"></td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>x</td><td>y</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>x</td><td>y</td><td></td></tr>
</table>

$$\begin{pmatrix} 11111111111111 & 2 & 3 & 4 \\ 1 & 2 & 3 & 4 \\ 1 & 2 & 3 & 4 \\ 1 & 2 & 3 & 4 \\ 1 & 2 & 3 & 4 \\ 1 & 2 & 3 & 4 \end{pmatrix}$$

$$f(x) \neq \begin{cases} \frac{x^2+2x}{\sqrt[3]{\frac{1}{x}}} & \text{if } x > 1, \\ \frac{x+\sqrt{x}}{x^2+1} & \text{otherwise.} \end{cases}$$

2.3 Graphics

jkdshfjdsf fhsdkfhsd techniques in order to apply them to a wider class of not necessarily *compact operators*. We start by *establishing* **establishing** ***establishing*** a connection between the subspaces and density of what we define as the associated Lomonosov space in a certain function space. On a

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Figure 2.1: This is a caption.

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Figure 2.2: This is a caption.

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Table 2.1: First example of table environment.

<table>
<tr><td colspan="3">$Name$</td><td>x</td><td>y</td><td colspan="2">age</td><td colspan="2">XXX</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>x</td><td>y</td><td></td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>x</td><td>y</td><td rowspan="2"></td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>x</td><td>y</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>x</td><td>y</td><td></td></tr>
</table>

Book	This is book
Table	ettr

Table 2.2: Example of Table with tabular environment.

techniques in order to apply them to a wider class of not necessarily *compact operators*. We start by *establishing* **establishing** ***establishing*** a connection between the subspaces and density of what we define as the associated Lomonosov space in a certain function space. On a

Chapter 3

Day 3 new

3.1 Theorem ....

Definition 3.1.1. *Let H be a subgroup of a group G. A* left coset *of H in G is a subset of G that is of the form xH, where $x \in G$ and $xH = \{xh : h \in H\}$. Similarly a* right coset *of H in G is a subset of G that is of the form Hx, where $Hx = \{hx : h \in H\}$*

Note that a subgroup H of a group G is itself a left coset of H in G.

Lemma 3.1.1. *Let H be a subgroup of a group G, and let x and y be elements of G. Suppose that $xH \cap yH$ is non-empty. Then $xH = yH$.*

Proof. Let z be some element of $xH \cap yH$. Then $z = xa$ for some $a \in H$, and $z = yb$ for some $b \in H$. If h is any element of H then $ah \in H$ and $a^{-1}h \in H$, since H is a subgroup of G. But $zh = x(ah)$ and $xh = z(a^{-1}h)$ for all $h \in H$. Therefore $zH \subset xH$ and $xH \subset zH$, and thus $xH = zH$. Similarly $yH = zH$, and thus $xH = yH$, as required. □

Lemma 3.1.2. *Let H be a finite subgroup of a group G. Then each left coset of H in G has the same number of elements as H.*

Proof. Let $H = \{h_1, h_2, \ldots, h_m\}$, where $h_1, h_2, \ldots, h_m$ are distinct, and let x be an element of G. Then the left coset xH consists of the elements xh_j for $j = 1, 2, \ldots, m$. Suppose that j and k are integers between 1 and m for which $xh_j = xh_k$. Then $h_j = x^{-1}(xh_j) = x^{-1}(xh_k) = h_k$, and thus $j = k$, since $h_1, h_2, \ldots, h_m$ are distinct. It follows that the elements $xh_1, xh_2, \ldots, xh_m$ are distinct. We conclude that the subgroup H and the left coset xH both have m elements, as required. □

REMARK 3.1.2. *This is a sample remark.*

Example 3.1.3. *Example example.*

Theorem 3.1.4. (Lagrange's Theorem) *Let G be a finite group, and let H be a subgroup of G. Then the order of H divides the order of G.*

Proof. Each element x of G belongs to at least one left coset of H in G (namely the coset xH), and no element can belong to two distinct left cosets of H in G (see Lemma 3.1.1). Therefore every element of G belongs to exactly one left coset of H. Moreover each left coset of H contains $|H|$ elements (Lemma 3.1.2). Therefore $|G| = n|H|$, where n is the number of left cosets of H in G. The result follows. □

By Theorem 3.1.4 we have .....

3.2 amssymb package

The most common characters are $\mathbb{R}$ for real numbers, $\mathbb{N}$ for natural numbers and $\mathbb{Z}$ for integers.

3.3 A package: Barcode generator

To compile, use command: **pdflatex -shell-escape filename**

if it does not work use the following command: **xelatex filename**

1234 5670

An this

The second one

Others

< 1234 5670 >

< 1234 5670 >

1234 5670

1234 5670

Even more

L E 2 8 H S 9 Z

And dotmatrix one