Abstract Algebra Note

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1.1 Writing Sample

We will define the integral of a measurable function in three steps. First, we define the integral of a nonnegative simple function. Let E be the measurable set in $\mathcal{R}^N$.

> **Definition 1.1 (Left Coset)**
>
> *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 $Hx = \{hx : h \in H\}\hbar$* ♣

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

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> **Theorem 1.1 (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.* ♡

As theorem 1.1 refered.

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enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

Theorem 1.2 (theorem name)

The content of theorem.

we can refer this theorem as 1.2.

Proposition 1.1 (Size of Left Coset)

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 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.
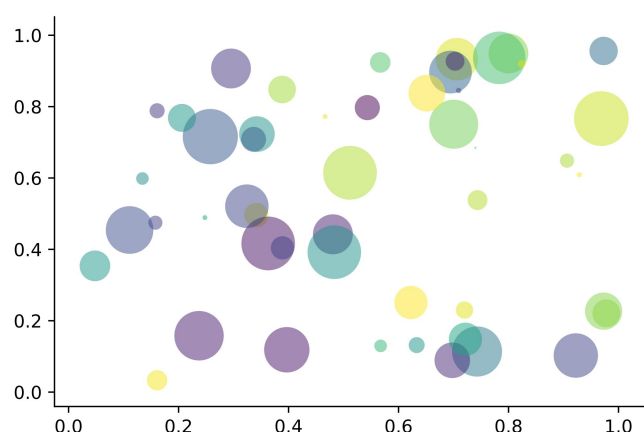

Figure 1.1: Matplotlib: Scatter Plot Example

Regression analysis is a powerful statistical method that allows you to examine the relationship between two or more variables of interest. While there are many types of regression analysis, at their core they all examine the influence of one or more independent variables on a dependent variable. The process of performing a regression allows you to confidently determine which factors matter most, which factors can be ignored, and how these factors influence each other.

Let's continue using our application training example. In this case, we'd want to measure the historical levels of satisfaction with the events from the past three years or so, as well as any information possible in regards to the independent variables.

1.2 Second section

This second section may include some special word, and expand the ones already used.

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Table 1.1: Auto MPG and Price

	(1)	(2)
mpg	-238.90***	-49.51
	(53.08)	(86.16)
weight		1.75***
		(0.641)
constant	11,253***	1,946
	(1,171)	(3,597)
obs	74	74
R^2	0.220	0.293

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

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- Routing and resource discovery;
  - Language Models
  - Vector Space Models
- Resilient and scalable computer networks;
- Distributed storage and search.

Chapter 2   FAQ

We list some FAQs for users to refer to:

1. *Why option numbers for natbib fail to take effect in v3.07?*

   In v3.07, when `gbt7714` is introduced, option `authoryear` is incompatible with `natbib`. In v3.08 and 3.09, `numbers`, `numbers`, `super` and `authoryear` are introduced.

2. *I want to customize font and background color.*

   Please use `pagecolor` to change background color, refer to this to customize font.

3. *Which version should I choose?*

   Please use Latest Release via GitHub or TEX Live 2022.

4. *Which editor should I choose?*

   You can use TEX Live 2022 built-in TEXworks or TEXStudio. You may refer to TEXworks autocomplete. TEX Live 2022 + TEXstudio is strongly recommended. Related configurations can be found at vscode-latex and sublime-text-latex.

5. *Hello, we want to use ElegantBook to write a book about machine learning and would like your authorization.*

   Feel free to use our templates by pointing out our copyright. For other issues, please refer to LPPL-1.3c. If you want to show us your work, you can share the URL with us afterwards.

6. *What is cross reference?*

   This template is aimed at who are not a complete beginner for LATEX. Please learn more about LATEX before using this template.

7. *Is the language for code highlighting optional?*

   Yes, `listings` package is used in ElegantBook, hence language is optional(e.g. `language=Python`). For global setting, use `lstset`. For more information, please refer to package documentations.

8. *When will Beamer template (ElegantSlide or ElegantBeamer) forthcoming?*

   Since there is an excellent theme Metropolis, no plan for Beamer theme.