Examples

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\begin{theorem}{A}
    $\N \subset \Z \subset \Q \subset \R \subset \C \subset \Ha$
\end{theorem}
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Theorem A. $\mathbb{N} \subset \mathbb{Z} \subset \mathbb{Q} \subset \mathbb{R} \subset \mathbb{C} \subset \mathbb{H}$

```
\begin{exercise}{2}
    Let $z = \alpha + i\beta \in \C$,
    $\Rea(z) = \alpha$, $\Ima(z) = \beta$
\end{exercise}
```

Exercise 2. Let $z = \alpha + i\beta \in \mathbb{C}$, $\operatorname{Re}(z) = \alpha$, $\operatorname{Im}(z) = \beta$

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\begin{lemma}{3}
    Denote $\card(\N)  = \aleph_0$. Then $\card \R = 2^{\aleph_0}$
\end{lemma}
```

Lemma 3. Denote $\operatorname{card}(\mathbb{N}) = \aleph_0$. Then $\operatorname{card} \mathbb{R} = 2^{\aleph_0}$

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\begin{problem}{4}
    Show that $T \in L(V,V)$ is injective
    if and only if $\Ker(T) = \left\{ 0 \right\}$
\end{problem}
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Problem 4. Let $T \in L(V.)$. Show $\operatorname{range}(T) = V$ $\operatorname{Ker}(T) = \{0\}$

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\begin{question}{5}
    Consider $\Id \in \mathcal{L}(V)$. What is $\Inv (\Id)$ ?
\end{question}
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Question 5. Consider $\mathrm{Id} \in S(n)$. What is $\mathrm{Inv}(\mathrm{Id})$?

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\begin{lemma}{2B}
    \[ \limto{x}{0} \frac{\sin(x)}{x} = 1 \]
\end{lemma}
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Lemma 2B.

$$\lim_{x \to 0} \frac{\sin(x)}{x} = 1$$

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    \begin{lemma}{2C}
        Let $x,y \in V$, $\lambda \in F$. Then
        \innerp{\lambda x}{y} = \lambda \innerp{x,y}
    \end{lemma}
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Lemma 2C. Let $x, y \in V$, $\lambda \in F$. Then $\langle \lambda x, y \rangle = \lambda \langle x, y \rangle$
