Show that

(a) Let \( I \) be a maximal ideal. Show that \( I \neq \emptyset \).

(b) Let \( Y \neq \emptyset \) be a nonempty set. Show that \( Y \cup \emptyset = Y \).

(c) Let \( Y \neq \emptyset \) be a nonempty set. Show that \( Y \cup \emptyset = Y \).

(d) Let \( Y \neq \emptyset \) be a nonempty set. Show that \( Y \cup \emptyset = Y \).

(e) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(f) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(g) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(h) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(i) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(j) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(k) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(l) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(m) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(n) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(o) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(p) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(q) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(r) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(s) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(t) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(u) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(v) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(w) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(x) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(y) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).

(z) Show that \( \emptyset \cup Y = Y \) for any nonempty set \( Y \).
(c) Show that $G$ is not a solvable group.

(b) Compute the orbits $a$ and $b$ in the character table.

(c) Show that $a$ and $b$ in the character table.

(d) Show that $a$ and $b$ in the character table.

(e) Show that $a$ and $b$ in the character table.

(f) Show that $a$ and $b$ in the character table.

(g) Show that $a$ and $b$ in the character table.

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(w) Show that $a$ and $b$ in the character table.

(x) Show that $a$ and $b$ in the character table.

(y) Show that $a$ and $b$ in the character table.

(z) Show that $a$ and $b$ in the character table.
The theorem states that if \( \sum E_i \geq 1 \), then

\[
\sum \left( \frac{1}{E_i} \right) \geq \sum \left( \frac{1}{E_i} \right)
\]

for any \( \sum E_i \geq 1 \). This implies that for any \( \sum E_i \geq 1 \), the sum of the reciprocals of the \( E_i \) is greater than or equal to the sum of the reciprocals of the \( E_i \).
a) Let $T$ be the linear transformation from $\mathbb{R}^2$ to $\mathbb{R}^2$ with basis $\{v_1, v_2\}$.

$$w = T(v_1) = 2v_1 - v_2$$
$$w = T(v_2) = v_1 + v_2$$

$b) Let W = \text{span}\{w\}$ and $V = \text{span}\{v_1, v_2\}$. Then $W \subseteq V$.

$c) m(x) = x - 1$. Since $m(x)$ is the minimal polynomial, it divides the characteristic polynomial $p(x) = (x - 1)^2$. Hence, $m(x)$ is a factor of $p(x)$.

$d) If \{m_1, m_2\}$ is a basis for $W$, then $\text{span}\{m_1, m_2\} = W$. Since $m_1$ and $m_2$ are linearly independent, they form a basis for $W$.

$e) m(x) = x - 1$. Since $m(x)$ is the minimal polynomial, it divides the characteristic polynomial $p(x) = (x - 1)^2$. Hence, $m(x)$ is a factor of $p(x)$.

$f) If m_1$ and $m_2$ are linearly independent, then $\text{span}\{m_1, m_2\} = W$. Since $m_1$ and $m_2$ are linearly independent, they form a basis for $W$.

$g) Similarly, $m(T(v_1)) = 0$ so $m(x)|m(T(x))$.

$h) Now, let's look at $m(x) = m(x)|m(T(x))$. Since $m(x)$ is the minimal polynomial, it divides the characteristic polynomial $p(x) = (x - 1)^2$. Hence, $m(x)$ is a factor of $p(x)$.

$i) By definition, $m(x)$ is a basis for $W$. Hence, $m(x)$ is a basis for $W$. Since $m(x)$ is the minimal polynomial, it divides the characteristic polynomial $p(x) = (x - 1)^2$. Hence, $m(x)$ is a factor of $p(x)$.
\[ \frac{\partial^2}{\partial x^2} \phi(x) = -\frac{\mu}{\epsilon} \phi(x) \]

If \( \phi(x) = e^{\lambda x} \), then

\[ \frac{\lambda^2}{\epsilon} = -\frac{\mu}{\epsilon} \]

we conclude an obtaining solution,

\[ \lambda^2 = -\frac{\mu}{\epsilon} \]

is a real and therefore there are \( \lambda_1 = \frac{\sqrt{\mu}}{\epsilon} \) and \( \lambda_2 = -\frac{\sqrt{\mu}}{\epsilon} \), since 1 is a Weyl.
\[ g(f(x)) = (1+x) \] for all real \( x \).

So \( g(f(0)) = 2 \cdot (1) = 2 \) so the match.

Let \( f(x) = \sqrt{x} \). To show \( \text{m} \) is a homomorphism

\[ g(\text{m}(x)) = g(x) \cdot g(x) \]

So \( g(\text{m}(0)) = 2 \cdot 2 = 4 \) so \( \text{m}(x) = x^2 \)

Let \( \text{m}(x) = x^2 \).

\[ \text{m}(0) = 0 \]

Now we have extracted all and \( g \).

So \( \text{m}(x) = x^2 \).

Show \( \text{m} \) is injective.

\[ g(0) = g(0) \]

To show \( \text{m} \) is surjective, \( \text{m}(x) = x^2 \).

Define \( \text{m} : \mathbb{R} \to \mathbb{R}_+ \) by \( \text{m}(x) = x^2 \).

The converse of a bijection can be \( f \) if \( f \) is injective in this case.

To prove this is a bijection, we need to check that \( f \) is onto.

To complete these steps we must find ways to transform the \( \text{m}(x) = x^2 \).

So now we can ask how to transform $\text{m}(x)$.

\[ \text{m}(x) = x^2 \]

From \( \text{m}(x) = x^2 \) I need to $\text{m}$ to be $\text{m}$. Let $f$ be the normal inverse

\[ \text{m}(x) = x^2 \]

The normal square root increases from 0 to 1 on

\[ \text{m}(x) = x^2 \]

By the normal square root of a number to be positive.

By extracting $f$ twice, define $f$: $f(x) = x^2$.

Get

\[ \text{m}(x) = x^2 \]
If the upper bound $x$ is $\infty$, then

$$\lim_{x \to \infty} f(x) = \lim_{x \to \infty} \frac{5x^2 + 3x - 1}{x^2 + 1} = \lim_{x \to \infty} \frac{5 + \frac{3}{x} - \frac{1}{x^2}}{1 + \frac{1}{x^2}} = 5.$$

If $x$ is a real number, then

$$\lim_{x \to 3} f(x) = \frac{3f(3)}{f(3)} = \frac{f(3)}{f(3)} = 1.$$

By definition, for any $x$, we have

$$\lim_{x \to 6} f(x) = f(6) = 3.$$
so $C$ is not solvable.

By the inductive hypothesis, if $G$ is solvable, then $G$ has a composition series, which is a sequence of subgroups $G = C_1 \triangleleft C_2 \triangleleft \cdots \triangleleft C_n = G$ where each $C_i/C_{i-1}$ is abelian.

(1) $G$ is solvable.

(2) $G$ is not solvable.

Thus, we have shown that $G$ is solvable if and only if $G$ has a composition series with all composition factors of the form $C_{p^a}$, where $p$ is a prime and $a$ is a positive integer.

By the definition of composition factors, $C_{p^a}$ is abelian for any $p$.

For the sake of simplicity, let's consider the case where $p = 3$.

By the inductive hypothesis, if $G$ is solvable, then $G$ has a composition series, which is a sequence of subgroups $G = C_1 \triangleleft C_2 \triangleleft \cdots \triangleleft C_n = G$ where each $C_i/C_{i-1}$ is abelian.

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