However, at least two of the solutions of the equation for $y$ and $x$ are not identically equal to one another. Therefore, there are infinitely many solutions to the equation for $y$ and $x$ that are not identically equal to one another. Consequently, we can determine if the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$. Therefore, the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

Thus, the solution is the same as the solution of the equation for $y$ and $x$ that is greater than or equal to $z$. Therefore, the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

Hence, the equation for $x$ is greater than or equal to $z$ is greater than or equal to $z$.

$$p = \begin{cases} x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \end{cases}$$

and so forth.

Since $x + y$ and $x + y$ are not identically equal to one another, we can determine if the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

$$p = \begin{cases} x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \end{cases}$$

and so forth.

Since $x + y$ and $x + y$ are not identically equal to one another, we can determine if the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

$$p = \begin{cases} x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \end{cases}$$

and so forth.

Since $x + y$ and $x + y$ are not identically equal to one another, we can determine if the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

$$p = \begin{cases} x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \end{cases}$$

and so forth.

Since $x + y$ and $x + y$ are not identically equal to one another, we can determine if the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

$$p = \begin{cases} x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \end{cases}$$

and so forth.

Since $x + y$ and $x + y$ are not identically equal to one another, we can determine if the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

$$p = \begin{cases} x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \end{cases}$$

and so forth.

Since $x + y$ and $x + y$ are not identically equal to one another, we can determine if the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

$$p = \begin{cases} x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \end{cases}$$

and so forth.

Since $x + y$ and $x + y$ are not identically equal to one another, we can determine if the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

$$p = \begin{cases} x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \end{cases}$$

and so forth.

Since $x + y$ and $x + y$ are not identically equal to one another, we can determine if the solution that is greater than or equal to $z$ for the equation $x$ is greater than or equal to $z$ is greater than or equal to $z$.

$$p = \begin{cases} x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \\ x + y & \text{if } z \geq x \text{ and } z \geq x \end{cases}$$

and so forth.
Theorem 2.2. If $X$ is a compact Hausdorff space and $f: X \rightarrow \mathbb{R}$ is a continuous function, then $f$ attains its maximum on $X$.

Proof. Let $M = \sup f(X)$ and $x_0 \in X$ be such that $f(x_0) = M$. Suppose, for the sake of contradiction, that there exists $x_1 \in X$ with $f(x_1) > M$. Since $X$ is compact, there is a finite open cover $\mathcal{U} = \{U_1, \ldots, U_n\}$ of $X$ such that $x_0 \in U_i$ and $x_1 \notin U_i$ for some $i$. By continuity, there exists $\delta > 0$ such that $f(x) < f(x_0) + \frac{M - f(x_0)}{2}$ for all $x \in U_i \cap B(x_0, \delta)$. This contradicts the maximality of $M$, proving the theorem.


\[ \text{Lemma 3.2.1: } \forall x \in N : N + 1 = N \]

\[ \text{Lemma 2.7 and 2.8: } \]

\[ \text{Proposition 2.4: } \]

\[ \text{Corollary 2.2: } \]

\[ \text{Corollary 2.3: } \]

\[ \text{Corollary 2.4: } \]

\[ \text{Corollary 2.5: } \]

\[ \text{Corollary 2.6: } \]

\[ \text{Corollary 2.7: } \]

\[ \text{Corollary 2.8: } \]

\[ \text{Corollary 2.9: } \]

\[ \text{Corollary 2.10: } \]