Basic Properties of Numbers [Triangle Inequality] For all numbers a and b, we have

We know that for all $x \geq 0$, $x =$ x and for all x ¡ 0, x ¡ x, hence $x \leq x. And given a real number x, x = \sqrt{x^2}$. Then

Since for all $x^2 \leq y^2$, $x \leq y$, as long as both x and y are nonnegative.

Numbers of Various Sorts [The Principle of Mathematical Induction] Let $n, N \in Z$, and for all $n \geq N$, let $P(n)$ be a
$P(N)$ is true, and
for all $k \geq N$, $P(k) \Rightarrow P(k+1)$ is true then for all $n \geq N$, $P(n)$ is true. [The Well-ordering Principle] Every nonempty
Let

If $F \neq \emptyset$, then by the Well-Ordering Principle, F contains a least element, say l. Since $P(N)$ is true, we know $l > N$, an

Graphs The number a-b is the distance between a and b. Then the set of numbers x which satisfy $x - a < \varepsilon$ may be pic
there exist $\varepsilon > 0$ such that for all $\delta > 0$ there exist x which satisfies $0 < x - a < \delta$ but not $f(x) - l < \varepsilon$. A function ca

We simply choose $\delta = min(\delta_1, \delta_2)$.
Hence the number l which f approaches near a is denoted by $\lim\limits_{x \to a} f(x)$ is possible. Continuous Functions Three Hard T