

1. Two questions that aren't quite the same:

a) Find the absolute maximum of the function $f(x) = 1 - x^2$.

b) Prove that the function $f(x) = 1 - x^2$ has an absolute maximum.

Definition 1. The function f is *bounded above* if there is a number M such that $f(x) \leq M$ for every x in the domain of f .

2. A third version of the question: prove that the function $f(x) = 1 - x^2$ is bounded above.

Definition 2. The function f is *bounded* if there is a number M such that

$$|f(x)| \leq M$$

for every x in the domain of f .

3. Prove that the function $f(x) = 1 - x^2$ is not bounded.