MAT 201 Quiz 14

Apr. 30, 2020

1. [23] Find the local min and local max for the function $f(t) = t\sqrt{4-t}$ for $0 \leq t \leq 4$. Leave your answer exact. Show all work.

2. [24] Find the global min and global max for the function $f(x) = \sin^2(x) + \cos(x)$ for $0 \leq x \leq 2\pi$. Leave your answer exact. Show all work.

3. [25] Sand is being dumped off a conveyor belt onto a pile in such a way that the pile forms in the shape of a cone whose radius is always equal to its height. Assuming that the sand is being dumped at a rate of 10 cubic feet per minute, how fast is the height of the pile changing when there are 1000 cubic feet on the pile?

4. [26] A rectangular solid with a square base has a surface area of 100 square centimeters. Find the dimensions that will result in a solid with maximum volume. The volume of a rectangular solid is given by $V = l \times w \times h$ where l is the length, w is the width and h is the height.