Written Homework 9

Due Wednesday, April 1, 2015

1. Show that the function

\[ f(x) = x^{301} + x^{171} + x + 1 \]

has neither a local maximum nor a local minimum. Then, show that the same function has at most one real root.

2. Let \( f(x) = 2 - |2x - 1| \). Show that there is no value of \( c \) such that \( f(3) - f(0) = f'(c)(3 - 0) \). Why does this not contradict the Mean Value Theorem?