QUIZ 6 - MATH 111 Friday, October 15

YOUR NAME:_____ George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] A rectangular box has volume $V(x) = 2x^4 + 3x^3 + 4x^2 + 9x - 6$ cubic inches. If the box has length $2x - 1$ inches and width $x + 2$ inches, find the height t of the box.

2. [6 points] Consider the polynomial

$$f(x) = 2x^3 + 9x^2 + 4x - 15.$$

(a) Use the Rational Zeros Theorem to list all possible rational zeros of $f(x)$.

(b) Find by inspection a zero among the numbers in the list of Part (a). (Please, show that it is a zero.)

(c) Use the zero of Part (b) and the Factor Theorem to factor $f(x)$ completely.

(d) Use the factorization of Part (c) to find all zeros of $f(x)$.