MAT 171 Name:_____
Lab 3 Summer Date:_____

Solve each of the following problems. Show all your work for credit!

1. ***Concert Tickets***. (section 3.1)
The revenue at the Assembly Center depends on the number of seats sold for the Willie Williams and the Wranglers concert. At $10 per ticket, they will fill all 8000 seats. The manager knows that for every $1 increase in the price, 500 tickets will go unsold. If the revenue in dollars, R(p), is given by $R(p) = -500p^2 + 13{,}000p$, where p is the price per ticket sold.

(a) What ticket price will produce a maximum revenue? What is the maximum revenue? You must show this algebraically.

(b) Find the number of **unsold** seats that resulted in this maximum revenue given the following $n = 13000 - 500p$ where n is the number of seats sold and p is the price. You must show this algebraically.

2. ***Solving a polynomial equation*** (section 3.2 and 3.3)

$f(x) = 6x^3 + 25x^2 - 24x + 5$

(a) Using the above function, demonstrate use of the Rational Root Test to list (unrepeated) all the potential rational zeros.

(b) Using the above function, demonstrate the following: (i) selecting divisors from the potential rational zeros, (ii) using Remainder Theorem to check whether it is a zero, (iii) whenever it is a zero use synthetic division to find the depressed polynomial, and (iv) repeating until you have the function down to a "solvable" function.

(c) Once you have the function down to a "solvable function", either factor (if possible), use quadratic formula, or square root property to find the remainder of the zeros (real and/or imaginary). Put all solutions in a solution box.