Honors Analysis Name _____

Copy original problem. Per _____ Date _____

Convince *me* that **you** understand the concept***!***

No decimals!

Chapter 2 Exam

I Solve for all x (including complex values, if any). Show ERRTS at work. Rewrite the equation in "factored form". (15 pts ea)

a) $15x^4 + 61x^3 + 57x^2 - 11x - 10 = 0$ b) $36x^4 - 108x^3 + 29x^2 + 48x - 20 = 0$

II Extreme value problems. Proper setup is very important. Your final answer must be a complete, meaningful sentence. (20 pts ea)

a) A small recording studio that produces its own records is able to press 100 records a day at a profit of $3.60 per record. If a more expensive process is used, production can be increased, but the profit per record diminishes by 2 cents per record for each additional record produced. How many additional records shoujld be made in order to maximize total daily profits?

b) A rectangle has a side on the *x*-axis, one side on the *y*-axis. One vertex is at the origin. The one vertex which is not on either axis has coordinates (*x*, *y*) and is on the line: $3x + 2y = 12$.

1. Draw an axis and graph the line. label everything.
2. Draw a "typical rectangle" as described in the story above.
3. Write the coordinates of the "fourth vertex" in terms of only *x* instead of in *x* and *y*.
4. What is the maximum area which can be enclosed by the "typical rectangle"?

III Parabola, Lines, etc. (30 pts tot)

Given: $x^2 + 6x + 8y - 31 = 0$ and $x^2 - 10x - 12y + 37 = 0$.

A trapazoid is formed in the following fashion: A vertical line is drawn through each vertex. A line is drawn between both foci. The fourth line is the *x*-axis.

Determine the area and perimeter of the trapazoid formed by the 4 lines.

Extra Credit ---------- 5 pts ----------

Solve for *all* roots: $x^4 - 10000 = 0$.