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. (15 pts ea)

a) $6x^5 - 29x^4 + 40x^3 - 7x^2 = 12x$

b) $24x^5 + 44x^4 + 50x^3 + 73x^2 + 4x - 30 = 0$

II Extreme value problems. Proper setup is very important. Your final answer must be a complete, meaningful sentence. (10 pts ea)

a) Given a rectangle with perimeter z. Prove that the rectangle (which contains maximum area) must be a square. Explain your rationale very clearly.

b) Find two numbers which add to one such that the sum of one of the numbers and twice the square of the other is a minimum.Parabola, Lines, Triangles.

III Given the parabola: $f(x) = \frac{1}{16}x^2 + \frac{1}{4}x - \frac{3}{4}$

Use the "method of completing the square" to put the function into "graphing form". Specifically identify the vertex, focus, axis intercepts and directrix.

Sketch $f(x)$ showing all items listed above. Draw 4 lines as follows: From each x-intercept through the vertex and from each x-intercept through the focus. Identify each line with its equation (in slope-intercept form).

Determine the area of the quadrilateral formed by the 4 lines. (50 points total)

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

Find the equation of the circle with center at the origin which is tangent to a line which passes through coordinates (0,6) and (8,0). Remove any parentheses and write in "standard" form (all coefficients are integers and the entire expression equals zero.)