Homework 8

Case study

Due 27 October 2003, 5 points each:

1. Solve for x: $x^{(x^2)} = x^2$.
2. Find all the pairs (x, y) that satisfy the system $\begin{cases} x^{2x} &= y+1 \\ x^y &= 1 \end{cases}$
3. Solve for x: $x^2 - |5x - 6| \leq 0$.
4. Sketch the graph of $f(x) = |x + |x + 2||$.
5. Sketch the region $\{(x, y) \mid |x| + |y^3| < 8\}$.

Extra credit: Find all the integral solutions of $(a^b)^c = 64$ (i.e. list all the solutions and show that there are no other solutions).