MT-A141 Precalculus Worksheet 1.5

Group: _____ Present: _____

1. How to graph piecewise-defined functions on your grapher.
   Graph
   $$f(x) = \begin{cases} 3 - x & x \leq 2 \\ (x-4)^2 & x > 2 \end{cases}$$
   (Use $Y_1 = (3-x)(x \leq 2) + (x-4)^2(x > 2)$ — why does this work?)
   What is wrong with the graph your calculator shows?

2. Find a good graphing window for the function $f(x) = 0.1x^3 - 4.3x^2 + 41x + 99$.
   Viewing window: [_____, _____] × [_____, _____]
   How many zeros does f have?
   Trace to find the approximate zeros: $x \approx$ _____
   Use zoom to find the zeros accurate to three decimal places:
   $x \approx$ _____
   Next, use "Zero" or "Root" in the CALC menu to find the zeros accurate to six decimal places:
   $x \approx$ _____
   Change the viewing window to $[-100, 300] \times [-10000, 25000]$ to see the end behavior of f.

3. Decide whether or not the function $f(x) = 5x^3 - 30.75x^2 + 60x - 3$ has hidden behavior.
   Explain what you find: