Module 7 Review

Write the solutions to the questions below in the space provided, and circle your final answer. You must justify your answer and show your work neatly to receive full credit. Partial credit will be given, but if you show your work neatly!

1. (Zeros of Polynomials)

   (a) What are the zeros of $f(x) = x^3 - 3x^2 + 2x$?

   (b) What do these zero represent on the graph of $f(x)$?

2. (Graphing a polynomial)

   (a) What are the possible rational zeros of $g(x) = 3x^3 - 9x^2 + 12$?
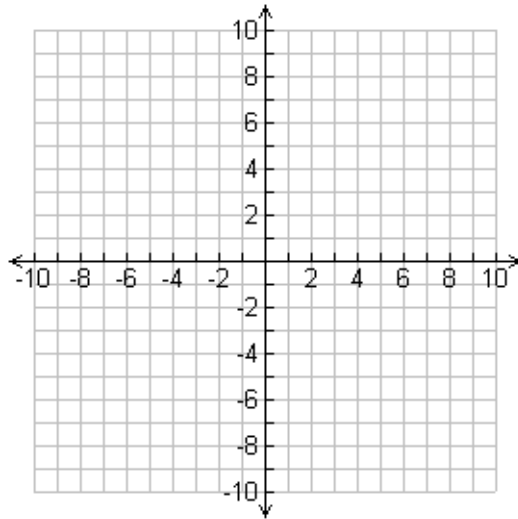
   (b) Find one actual rational zero of $g(x)$?

   (c) Graph $g(x)$. Use the following questions to guide your solution.

      i. Use the fact that $g(2) = 0$ to write $g(x)$ as a product of linear factors.

      ii. What is the end behavior of $g(x)$?

     iii. What are the x-intercepts and y-intercepts of $g(x)$?

     iv. Sketch a graph using information about whether or not $g(x)$ will cross the x-axis at a zero or just bounce off the x-axis.

3. What would change about the graph if you were to graph $h(x) = 3x^4 + 9x^3 - 12x$?

4. (Polynomial Inequalities) Solve the inequality $(x - 1)^3(x + 2)(x + 5)^2 > 0$. Graph your solution on a number line and write it in interval notation.