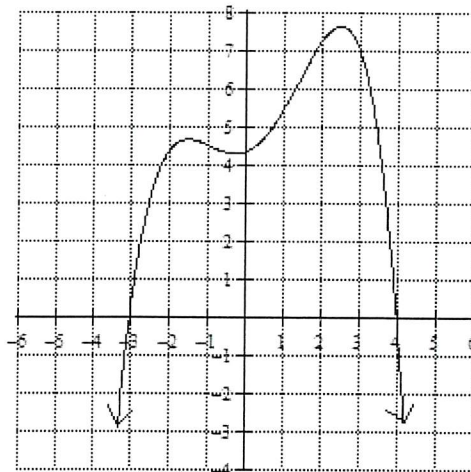**Day #27 Homework**

Given the graph of the function $h(x)$, a polynomial function of least degree, pictured to the right, answer questions 1 – 2.

1. What type of function is $h(x)$? Give a reason for your answer.

2. What is the combination of positive, negative, imaginary and zero roots of $h(x)$? Give a reason for your answer.

Answer questions 3 – 9 about the function $f(x) = 6x^4 - x^3 - 34x^2 + 19x + 10$.

3. How many sign changes are in the equation of $f(x)$?	4. How many positive roots is/are possible for $f(x)$?
5. Find an equation for $f(-x)$. How many sign changes are in the equation of $f(-x)$?	6. How many negative roots is/are possible for $f(x)$?
7. Is zero a possible root of $f(x)$? If so, how many times is zero a root? Give a reason why or why not.	8. Create a table displaying the all of the possible combinations of positive, negative, imaginary and zero roots of $f(x)$.

9. Using a graphing calculator, sketch a graph of $f(x)$. Then, based on the graph, which combination from your table in exercise 8 is the correct combination. Give a reason for your answer.

Given the graph of the function $g(x)$, a polynomial function of least degree, pictured to the right, answer questions 10 – 11.

10. What type of function is $g(x)$? Give a reason for your answer.
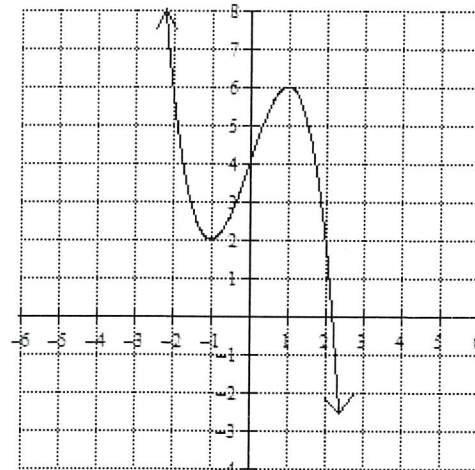
11. What is the combination of positive, negative, imaginary and zero roots of $g(x)$? Give a reason for your answer.

12. Given the function below, create a chart of all of the possible numbers of positive, negative, imaginary and zero roots of the function. Show your analysis.	14. Given the function below, create a chart of all of the possible numbers of positive, negative, imaginary and zero roots of the function. Show your analysis.
$$p(x) = 2x^3 + 7x^2 + 2x - 3$$	$$g(x) = x^4 + 2x^3 - 3x^2$$
13. Using a graphing calculator, sketch a graph of $p(x)$. Then, based on the graph, which combination from your table in exercise 12 is the correct combination. Give a reason for your answer.	15. Using a graphing calculator, sketch a graph of $g(x)$. Then, based on the graph, which combination from your table in exercise 14 is the correct combination. Give a reason for your answer.