The Birthday Polynomial Project

Task: To create, characterize, graph, and present a polynomial function that reflects you.

 Identify IN ORDER the digits of the month (1 or 2 digits), day (1 or 2 digits), and year (4 digits) of your birthday. For example, I was born on August 13, 1985, so my ordered birthday digits are "8131985." (The most number of digits you could have is 8, and the least number of digits you could have is 6).

Your Birthday:

Your Digits:

2. Create a polynomial using your digits in order. Again, for example, my polynomial *could* be:

$$y = 8x^5 - 13x^4 + x^3 + 9x^2 + 8x - 5$$

Your first polynomial:

 Experiment with the shape of your birthday polynomial by changing the signs of your various terms as well as the grouping of numbers. <u>Try to create a polynomial function with an interesting shape and some turning</u> <u>points</u>. Part of the fun is playing with the numbers to create something interesting! Be creative!

Your polynomial needs to have the following characteristics:

- i. Degree of at least 4.
- ii. A real zero

Your final polynomial:

- 4. Analyze the key features of your polynomial by finding these characteristics:
 - i. Domain and range
 - ii. The y-intercept
 - iii. Academic: All real zeroes and <u>number</u> of complex zeroes Honors: All real and complex zeroes
 - iv. Minimums and maximums (Real and Absolute)
 - v. Increasing and Decreasing intervals
 - vi. Positive and Negative intervals
 - vii. A description of the end behavior As x approaches - ∞ , y approaches _____ As x approaches ∞ , y approaches _____
- 5. Submit a Desmos Activity (link on course website by teacher/class). Your Desmos activity should include a visual representation of the graph of your polynomial (screen 1) and a written statement of your findings in Part 4, above (screen 2).

Criteria	0-2 pts.	3-5 pts.	6-8 pts.
The accuracy of your polynomial	Polynomial incorrect	Somewhat correct	Completely correct
The completeness and accuracy of your analysis	Analysis incorrect	Somewhat correct analysis	Completely correct analysis
The accuracy and neatness of your presentation	Presentation not accurate and/or neat	Presentation somewhat accurate and neat	Presentation accurate and neat

Name