Honors Algebra 2 Name:
Unit 7 Period:

The Birthday Polynomial Project

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

Process:

1. 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 3, 1985, so my ordered birthday digits are "831985." (The most number of digits you could have is 8, and the least number of digits you could have is 6).

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

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

3. Experiment with the shape of your birthday polynomial by changing the signs of your various terms. Try to create a polynomial function with an interesting shape and some turning points. Be creative! Find a polynomial having a graph that expresses you.

4. Analyze your polynomial by finding these characteristics:
   - Domain and range
   - The y-intercept
   - All real and complex zeros
   - Minimums and maximums
   - A description of the end behavior

Product:

5. Make a presentation using technology (PowerPoint, Keynote, Desmos, etc.) of your polynomial.
   - Be creative, colorful, neat, and accurate

At a minimum, your presentation should include a visual representation of the graph of your polynomial and a written statement of your findings in Part 4, above.

Assessment:

6. Your grade will be weighted as a Quiz. Your score will be based on three criteria:
   - The accuracy of your polynomial
   - The completeness and accuracy of your analysis
   - The accuracy, neatness, originality, and creativity of your presentation

Reed. "The Birthday Polynomial Project". Web. (http://blogs.spsk12.net/1051/files/2013/01/Birthday-Polynomial-Project.pdf). 25 Jun. 2014.

The Birthday Polynomial Project

Standard: A.SSE.1.a - Interpret parts of an expression, such as terms, factors, and coefficients.

A.APR.b.3 - Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

F.IF.7 - Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

F.IF.4 - For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

F.IF.8 - Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

A.CED.2 - Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

N.CN.8 - Extend polynomial identities to the complex numbers. *For example, rewrite* $x^2 + 4$ *as* $(x + 2i)(x – 2i)$.

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

Criteria:

- The accuracy of your polynomial
- The completeness and accuracy of your analysis
- The accuracy and neatness of your presentation

Rubric: (for each problem)

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