**BIRTHDAY POLYNOMIAL PROJECT**

**Objective:** to create, characterize and graph a polynomial

function that reflects you!

**Process:**

1. Write, IN ORDER, the digits of the month (1 or 2 digits), day (1 or 2 digits), and year (4 digits) of your birthday.
	1. For example, February 27, 1986 would be “2271986”. You must use 6, 7, or 8 digits. If 0’s take up to many of your digits, replace them with your favorite number instead.
2. Create a polynomial using your digits, in order.
	1. For example:$f\left(x\right)=2x^{6}+2x^{5}-7x^{4}+x^{3}-9x^{2}-8x-6$.
3. Experiment with the shape of your birthday polynomial by changing the signs (+/-) of various terms in desmos. Try to create a polynomial function with an interesting shape and some turning points. Be creative! You are trying to express yourself in this graph!
	1. For example here is a picture of 2 different birthday polynomials with changed signs:



1. Analyze your polynomial (using desmos, or just your super math skills)by finding these characteristics:
	1. Domain and Range
	2. The y-intercept
	3. All real and complex zeros (include any multiplicities)
	4. Minimums and maximums
	5. End behavior

**Product:**

1. Make a presentation of your polynomial. You could print this out and add color, or you could draw it yourself. I want it to be creative, colorful, neat and accurate.

At a minimum, your presentation should include a visual representation of the graph of your birthday polynomial, the equation itself, and written statements of your findings in part 4 above.

**Assessment:**

1. Your grade will be weighted as a 12 Homework assignments, so 24 points. Your score will be based on three criteria:
	1. The accuracy of your polynomial
	2. The completeness and accuracy of your analysis
	3. The accuracy, neatness, originality, and creativity of your presentation.

Rubric:

