Name:	Date:	Unit 6 Assessments
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Polynomial Project

★ <u>Objective</u>: For this project, you will create a polynomial according to the guidelines below, and demonstrate your knowledge of polynomials by analyzing the outlined aspects of your polynomial.

*Your achievement will be scored according to the rubric on the back of this page.

➢ <u>Directions</u>:

 \Rightarrow Create a one-variable polynomial that has coefficients as values in align with your birth date! You may choose any exponents and signs you wish.

For example, if your birthday is May 10^{th} , 1999, two (of infinite) possibilities for your polynomial may be $f(x) = 5x^7 + 10x^5 - x^4 + 9x^3 - 9x + 9$, or $f(x) = 5x^5 + x^4 - 0x^3 + 19x^2 + 9x - 9$.

Keep in mind how the graph of your polynomial will look. I suggest utilizing **desmos.com** to explore possibilities! ©

☆ For your polynomial, complete each of the following:

- Sketch a graph of your polynomial.
- Create a design/picture from your polynomial's graph that represents you in some way.
- Write a short paragraph supporting why your polynomial design/picture represents you.
- State the domain and range of your polynomial.
- State the y-intercept of your polynomial, and show calculations to support this point.
- State the x-intercepts of your polynomial.

- Describe whether the x-intercepts of your polynomial are rational or irrational. (Desmos.com rounds irrational roots to the nearest hundredth.) Support your claim by using the rational root theorem to describe the only possible rational roots.

- If the x-intercepts of your polynomial are rational, use polynomial division to prove that they are rational. If the x-intercepts of your polynomial are irrational, choose any two possible roots for your polynomial, and apply polynomial division to show that they are not in fact roots.

- Describe the interval(s) on which f(x) > 0 and the interval(s) on which f(x) < 0.
- Describe the interval(s) on which f(x) is increasing, and when f(x) is decreasing.
- Arrange/organize all of this information neatly on a poster.

*Feel free to use my example as a guide, and let me know if you have any questions!

Be creative, and have fun! ©

Due Date: _____

	4 points	3 points	2 points	1 point
Creation	Polynomial is			Polynomial is not
	created according			created according
	to the guidelines			to the guidelines.
Graph	Sketch of	Sketch of	Sketch of	Sketch of
	polynomial graph	polynomial graph	polynomial graph	polynomial graph
	is 100% correct,	is 75% - 99%	is 50% - 74%	is less than 50%
	and all intercepts	correct, and/or	correct, and/or	correct, and/or
	and local max/min	missing some	missing most	missing all
	points are labeled.	intercepts and	intercepts and	intercepts and
		local max/min	local max/min	local max/min
		points.	points.	points.
Domain & Range	Domain and range	Domain and range	Domain and range	Domain and range
	are stated 100%	are stated 75% -	are stated 50% -	are stated less
	correctly.	99% correctly.	74% correctly.	than 50%
				correctly.
y-intercept	y-intercept is			y-intercept is not
-	stated correctly			stated correctly
x-intercepts	x-intercept(s)			x-intercept(s)
	is/are stated			is/are not stated
	correctly			correctly
Supporting	Correct	75% of the	50% of the	Less than 50% of
Calculations	calculations are	calculations	calculations	the calculations
	provided to	outlined in "4	outlined in "4	outlined in "4
	support the y-	points" are shown,	points" are shown,	points" are shown,
	intercept. All	OR only 75% -	OR only 50% -	OR less than 50%
	possible roots are	99% of the	74% of the	of the calculations
	stated. Division is	calculations are	calculations are	are correct.
	used twice, as	correct.	correct.	
	outlined in the			
	directions.	750/ 000/ 64		
Intervals	Intervals on which	75% - 99% of the	50% - 74% of the	Less than 50% of
	f(x) is positive,			the intervals on
	negative,	f(x) is positive,	f(x) is positive,	WHICH T(X) IS
	decreasing, and	ineracing and	inercocing and	positive, negative,
	atotod correctly	decreasing, and	decreasing, and	decreasing, and
	Stated correctly.	ototod correctly	atotod correctly	atotod correctly
Croativity	Docian is yony	Docian is	Docian is not	Stated correctly.
Creativity		Design is		completed (0
		somewhat	Cleative at all.	
Nastnass/Calor	Einal postor is post	Einal postor is post		Final postar is not
ivealitess/COIDI	and colorful	and/or colorful but		neat and lacking
		not both		color
Ronrosontation	Explanation of how	Explanation of how	Explanation of how	Only one sentence
Evolution	the chosen design	the chosen design	the chosen design	is provided to
	renresente vou ie	renresente vou ie	renresente vou ie	explain how the
	thorough $(5 - 10)$	lacking $3 - 4$	very hrief (2	chosen design
	sentences)	sentences)	sentences)	represents vou
	55mono65j.		55mono65j.	i oprobonito you.

Comments:

Total: