

Polynomial Project

Name: _____

Date: _____ Pd: _____

Title: _____

Directions: You will use the dot paper provided to create an artistic representation of a set of polynomial functions.

1. You will graph a total of three polynomial functions. You must plot **at least** ten points for each graph so that your sketches look accurate. One of your polynomials must have an even degree, and one must have an odd degree. All of your polynomials must have a degree greater than one.

2. Graph a polynomial $f(x)$ with at least one single, double, and triple root. Write the equation for $f(x)$ in factored form. $f(x) =$ _____

 X min : _____degree of $f(x)$: _____ X max : _____ Y min : _____as $x \rightarrow \infty$, $f(x) \rightarrow$ _____ Y max : _____as $x \rightarrow -\infty$, $f(x) \rightarrow$ _____

3. Graph a polynomial $g(x)$ that has only two roots in common with $f(x)$. Write the equation for $g(x)$ in factored form. $g(x) =$ _____

 X min : _____degree of $g(x)$: _____ X max : _____ Y min : _____as $x \rightarrow \infty$, $g(x) \rightarrow$ _____ Y max : _____as $x \rightarrow -\infty$, $g(x) \rightarrow$ _____

4. Graph a polynomial $h(x)$ that has only one root in common with $g(x)$. Write the equation for $h(x)$ in factored form. $h(x) =$ _____

 X min : _____degree of $h(x)$: _____ X max : _____ Y min : _____as $x \rightarrow \infty$, $h(x) \rightarrow$ _____ Y max : _____as $x \rightarrow -\infty$, $h(x) \rightarrow$ _____

5. Color each region differently (using different colors, shades, or patterns) so that no two bordering regions are colored alike. Cut off the margin by cutting along the outer most rows of dots and mount your finished artwork on a piece of colored paper.

6. Extension: Choose one of the regions in your artwork that is bounded on all sides. Identify which region you chose:

a. Describe a method for finding the approximate area of this region.

b. Is it possible to find the exact area of this region? If not, why not? If so, how would you find the exact area of the region?