

Name: _____

Lesson 2.1 - Linear & Quadratic Functions & Modeling

OBJECTIVE(S)

<u>SELF-ASSESSMENT</u>	<u>BEFORE:</u>	<u>DURING:</u>	<u>AFTER:</u>
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> • Polynomial functions • Linear functions & their graphs • Rate of change (average & constant) • Quadratic functions & their graphs • Standard form & vertex form of a quadratic function • The “vertical free-fall motion” model 		<p><u>SKILLS</u></p> <ul style="list-style-type: none"> • Identify polynomial functions • Find equations of linear functions • Analyze properties of linear functions: rate of change & initial value • Model with linear functions and linear regression • Analyze properties of quadratic functions: axis & vertex • Find equations of quadratic functions • Model with quadratic functions and quadratic regression 	

VOCABULARY – Use the Pre-Calculus glossary – on the Pre-Calculus Moodle page or my website – to define the terms below.

Axis	
Constant rate of change	
Correlation coefficient	
Initial value of f	
Linear correlation	
Linear function	
Polynomial	
Quadratic function	
Vertex	

Lesson 2.2 - Power Functions & Modeling

OBJECTIVE(S)

<u>SELF-ASSESSMENT</u>	<u>BEFORE:</u>	<u>DURING:</u>	<u>AFTER:</u>
<u>KNOWLEDGE</u>		<u>SKILLS</u>	
<ul style="list-style-type: none"> • Power vs. Monomial functions • Direct & indirect (inverse) variation 		<ul style="list-style-type: none"> • Analyze properties of power functions: constant of variation & power • Write a power function formula • Analyze, describe and graph power functions • Model with power functions and power regression 	
<u>VOCABULARY</u> – Use the Pre-Calculus glossary – on the Pre-Calculus Moodle page or my website – to define the terms below.			
Monomial function			
Power function			

Lesson 2.3 - Polynomial Functions of Higher Degree & Modeling

OBJECTIVE(S)

<u>SELF-ASSESSMENT</u>	<u>BEFORE:</u>	<u>DURING:</u>	<u>AFTER:</u>
<u>KNOWLEDGE</u>		<u>SKILLS</u>	
<ul style="list-style-type: none"> • Graphical transformations on functions • Typical graphs of cubic and quartic functions • Polynomial theory regarding extrema, zeros & end behavior • Leading term test for polynomial end behavior • The effect of zeros of even and odd multiplicity on the graph of a polynomial 		<ul style="list-style-type: none"> • Relate graphs of polynomials to monomials • Apply polynomial theory – with regards to extrema, zeros and end behavior • Find the zeros of a polynomial function graphically or algebraically • Sketch the graph of a factored polynomial • Find equations of cubic functions • Use quadratic, cubic and quartic regression 	

VOCABULARY – Use the Pre-Calculus glossary – on the Pre-Calculus Moodle page or my website – to define the terms below.

Coefficient(s)	
Multiplicity	
Term (of a polynomial)	
Zero (of a function)	

EXPECT AN ASSESSMENT OF LESSONS 2.1 – 2.3

Lesson 2.4 - Real Zeros of Polynomial Functions

OBJECTIVE(S)

<u>SELF-ASSESSMENT</u>	<u>BEFORE:</u>	<u>DURING:</u>	<u>AFTER:</u>
<u>KNOWLEDGE</u>		<u>SKILLS</u>	
<ul style="list-style-type: none"> • The Division Algorithm for Polynomials • Synthetic division • The Remainder Theorem • The Factor Theorem • Fundamental connections for polynomial functions • The Rational Zeros Theorem 		<ul style="list-style-type: none"> • Divide polynomials via long division or synthetic division • Use the Remainder Theorem to find the remainder when $f(x)$ is divided by $x - k$ • Use the Factor Theorem to determine whether a polynomial is a factor of another • Find a polynomial function with a specific leading coefficient, given a degree and zeros • Use the Rational Zeros Theorem to list potential rational zeros and determine which, if any, are zeros of a polynomial • Establish bounds for the real zeros of a function f • Find all real zeros of a function; identify as rational or irrational 	

VOCABULARY – Use the Pre-Calculus glossary – on the Pre-Calculus Moodle page or my website – to define the terms below.

Irrational zeros	
Lower bound (for real zeros)	

Rational zeros	
Synthetic division	
Upper bound (for real zeros)	

Lesson 2.5 - Complex Zeros & the Fundamental Theorem of Algebra

OBJECTIVE(S)

<u>SELF-ASSESSMENT</u>	<u>BEFORE:</u>	<u>DURING:</u>	<u>AFTER:</u>
<u>KNOWLEDGE</u>		<u>SKILLS</u>	
<ul style="list-style-type: none"> • Fundamental Theorem of Algebra • Linear Factorization Theorem • Fundamental Polynomial Connections (the complex case) • Complex Conjugate Zeros Theorem 		<ul style="list-style-type: none"> • Write a polynomial function in standard form: given the linear factorization; w/real coefficients from given zeros and multiplicities • Identify the zeros and x-intercepts of the graph of a polynomial given the linear factorization • Given a polynomial function in standard form, find <u>all</u> zeros (real and complex) and write a linear factorization • Given a zero and $f(x)$, find the remaining zeros of $f(x)$ and write a linear factorization • Factor a polynomial function and write as a product of linear and irreducible quadratic factors w/real coefficients • Determine the number of complex and real zeros a polynomial function has 	

VOCABULARY – Use the Pre-Calculus glossary – on the Pre-Calculus Moodle page or my website – to define the terms below.

Irreducible quadratic over the reals	
---	--

EXPECT AN ASSESSMENT OF LESSONS 2.4 & 2.5

Lesson 2.6 - Graphs of Rational Functions

OBJECTIVE(S)

<u>SELF-ASSESSMENT</u>	<u>BEFORE:</u>	<u>DURING:</u>	<u>AFTER:</u>
<u>SKILLS</u>			
<ul style="list-style-type: none"> Describe how the graph of a rational function can be obtained by transforming the graph of the reciprocal function Find end behavior, vertical & slant asymptotes, (use limits to describe the corresponding behavior) x-intercepts and the y-intercept of a rational function Analyze graphs of rational functions 			

Lesson 2.7 - Solving Equations in One Variable

OBJECTIVE(S)

<u>SELF-ASSESSMENT</u>	<u>BEFORE:</u>	<u>DURING:</u>	<u>AFTER:</u>
<u>SKILLS</u>			
<ul style="list-style-type: none"> Solve rational equations algebraically and graphically Set up and solve applications of rational functions 			

Lesson 2.8 - Solving Inequalities in One Variable

OBJECTIVE

<u>SELF-ASSESSMENT</u>	<u>BEFORE:</u>	<u>DURING:</u>	<u>AFTER:</u>
<u>SKILLS</u>			
<ul style="list-style-type: none"> Determine the x value that cause a polynomial function to be zero, positive and negative Solve polynomial inequalities analytically (using a sign chart) and graphically Determine the values of x that cause a rational function to be zero, undefined, positive, negative Solve rational inequalities; solve inequalities involving radicals and absolute values Set up and solve applications involving rational functions and inequalities 			

EXPECT AN ASSESSMENT OF LESSONS 2.6 – 2.8