# Platte County School District #2
# Mathematics Standards
# 11th Grade - Algebra 2

2018-2019 School Year

| Standard | Major/Supporting/Additional |
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| N.RN.1<br>Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. | Supporting |
| N.RN.2<br>Rewrite expressions involving radicals and rational exponents using the properties of exponents. | Major |
| N.CN.1<br>Know there is a complex number $i$ such that $i^2 = -1$, and every complex number has the form $a + bi$ with $a$ and $b$ real. | Supporting |
| N.CN.2<br>Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. | Major |
| N.CN.7<br>Solve quadratic equations with real coefficients that have complex solutions. | Major |
| A.SSE.2<br>Use the structure of an expression to identify ways to rewrite it. | Major |
| A.SSE.4<br>Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.*\* | Major |
| A.APR.1<br>Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. | Supporting |
| A.APR.3<br>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. | Major |

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| A.APR.6<br>Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system. | **Supporting** |
| A.APR.7<br>(+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions. | **Supporting** |
| A.CED.1<br>Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions*. | **Major** |
| A.CED.2<br>Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. | **Supporting** |
| A.CED.3<br>Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*. | **Supporting** |
| A.REI.2<br>Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. | **Major** |
| A.REI.6<br>Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. | **Supporting** |
| A.REI.12<br>Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in | **Supporting** |

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| the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. | |
| F.IF.3<br>Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. | **Supporting** |
| F.IF.4<br>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. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.** | **Major** |
| F.IF.5<br>Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.** | **Major** |
| F.IF.7<br>Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*<br><br>   a. Graph linear and quadratic functions and show intercepts, maxima, and minima.<br>   b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.<br>   c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.<br>   d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.<br>   e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. | **Major** |
| F.BF.2 | **Supporting** |

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| Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* | |
| F.BF.3<br>Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of $k$ (both positive and negative); find the value of $k$ given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them. | **Supporting** |
| F.BF.5<br>(+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents. | **Supporting** |
| F.LE.4<br>For exponential models, express as a logarithm the solution to $ab^{(ct)} = d$ where $a$, $c$, and $d$ are numbers and the base $b$ is 2, 10, or $e$; evaluate the logarithm using technology. | **Major** |
| F.TF.1<br>Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. | **Supporting** |
| F.TF.2<br>Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle. | **Major** |