Algebra 2

Topic 1 Level Scales

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| 4 | * interprets key features in a real-world context of rational, piecewise, exponential, or logarithmic functions given as a verbal description * expresses the domain of a function that is neither linear nor quadratic from its graph for a real-world context, using either set or interval notation * relates the domain of a function to its graph for a realworld context * constructs the graph of an exponential or logarithmic function given key features; constructs the graph of a rational function given the equation * identifies differences and similarities between a function and its transformations * justifies a transformation that has been applied to a function, not limited to linear, quadratic, exponential, or square root * writes a recursive formula for a sequence that is not arithmetic or geometric * writes recursive formulas using explicit formulas and vice versa * completes an explanation on how to find a solution for f(x) = g(x) * solves a literal equation that requires four or five procedural steps * writes a system of three equations for a real-world context * explain why a solution is viable or nonviable for a real-world context |
| 3 | * interprets the key features in a real-world context when given a graph or table of a logarithmic, polynomial, absolute value, square root, rational, or piece-wise; interprets key features of polynomial, square root, or absolute value functions given as a verbal description * expresses the domain of a quadratic function from its graph in a real-world context, using either set or interval notation * constructs the graph of an exponential, logarithmic, absolute value, polynomial, square root, or cube root function given its equation; constructs the graph of a quadratic function given key features * identifies the graph of an exponential function or radical function with at least two transformations; completes a table of values for a function with at least two transformations; recognizes even and odd functions given a graph or equation; determines the value of k when given a set of ordered pairs for two functions or a table of values for two functions * writes an arithmetic or geometric sequence using a recursive formula or an explicit formula * writes an arithmetic sequence using a recursive formula or an explicit formula; writes a geometric sequence using a recursive formula or an explicit formula * determines a solution or an approximate solution for f(x) = g(x) using a graph, table of values, or successive approximations, where f(x) and g(x) are an exponential with a rational exponent, polynomial degree greater than two, rational, absolute value, and logarithmic * solves a system that consists of linear equations in two variables with rational coefficients by graphing, substitution, or elimination; interprets solutions in a realworld context or mathematical context * solves a literal equation that requires three procedural steps * writes or chooses a system of two equations with rational coefficients, where one equation can be a simple quadratic equation for a realworld context; writes a single equation that has at least three variables with rational coefficients for a real-world context; identifies the meaning of the variables * models constraints using a combination of equations, inequalities, systems of equations, systems of inequalities for a real-world context; interprets solutions as viable or nonviable based on the context |
| 2 | * identifies the key features in a real-world context when given a graph or table of a linear, quadratic, exponential, logarithmic, polynomial, absolute value, square root, rational, or piece-wise; interprets key features, in a real-world context, of linear or quadratic functions given as a verbal description * expresses the domain of a linear function from its graph in a real-world context, using either set or interval notation * identifies the graph of a linear, quadratic, or exponential function given its equation; constructs the graph of a linear or quadratic function given its equation; constructs linear function using x- and y-intercepts * identifies the graph of a linear or quadratic function with a vertical or horizontal stretch or shrink; determines the value of k given a graph and its transformation; completes a table of values for a function that has a vertical or horizontal shift; graphs a function with a vertical or horizontal shift * writes an explicit function for arithmetic sequences and geometric sequences in a real-world context; completes a table of calculations * writes an arithmetic or geometric sequence when given a graph, verbal description, table of values, or set of ordered pairs in a real-world context * determines an integral solution or approximate solution using successive approximations for f(x) = g(x) given a graph or table of linear, quadratic, or exponential functions * explains whether a system of equations has one, infinitely many, or no solutions; solves a system of equations by graphing or substitution (manipulation of equations may be required) or elimination in the form of ax + by = c and dx + ey = f, where multiplication is required for both equations * solves a literal linear equation in a real-world context that requires two procedural steps * writes or chooses a system of linear equations with integral coefficients for a real-world context or writes a single equation for a real-world context that has at least three variables with integral coefficients * identifies variables; writes constraints as a system of linear inequalities or linear equations for a real-world context |