Multivariate Equations & Inequalities

5.1 Investigate systems of linear inequalities (contextual situations)

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
Identify, graph, and interpret solutions of systems of inequalities (A.CED.3, A.CED.2, A.REI.12)	Can extend thinking beyond the standard, including tasks that may involve one of the following: • Designing • Connecting • Synthesizing • Applying • Justifying • Critiquing • Analyzing • Creating • Proving	Create and graph a system of inequalities for contextual situations Interpret solutions **as viable or nonviable options** in context of the situation (maximizing/minimizing)	**Create and graph** a system of inequalities for contextual situations Interpret solutions **in context of the situation.**	**Identify a system of inequalities** for contextual situations **Identify solutions**	Little evidence of reasoning or application to solve the problem Does not meet the criteria in a level 1

A.CED.3   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.

A.CED.2   Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes ~~with labels and scales.~~

A.REI.12   ~~Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in 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.

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5.2 Solve nonlinear systems

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
Solve non-linear systems (A.REI.11)	Can extend thinking beyond the standard, including tasks that may involve one of the following: • Designing • Connecting • Synthesizing • Applying • Justifying • Critiquing • Analyzing • Creating • Proving	For polynomial, rational, absolute value, exponential, and logarithmic functions, find intersection points using technology, graphs, and tables and **explain in the context of a situation.**	For polynomials, rational, absolute value, exponential, and logarithmic functions, find intersection points using technology, graphs, **and** tables	For polynomial, rational, absolute value, exponential, and logarithmic functions, find intersection points using technology, graphs **or** tables	Little evidence of reasoning or application to solve the problem
Solve systems of linear and quadratic equations (A.REI.7)		Solve a system of a linear equation and quadratic equation in two variables algebraically, **when completing the square is necessary**.	Solve a system of a linear equation and quadratic equation in two variables algebraically, **when having to solve for y**.	Solve a system of a linear equation and quadratic equation in two variables algebraically, **when one equation is solved for y**.	Does not meet the criteria in a level 1

A.REI.11 Explain why the *x*-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.★

A.REI.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line y = -3x and the circle x2 + y2 = 3.