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**A.APR.3** 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.

*The Proficient student is able to 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.*

## Creating Equations

Create equations that describe numbers or relationships.

**A.CED.1** 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.

*The Proficient student is able to 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.*

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

*The Proficient student is able to create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*

**A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.

*The Proficient student is able to represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.*

## Reasoning with Equations and Inequalities

Understand solving equations as a process of reasoning and explain the reasoning.

**A.REI.2** Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

*The Proficient student is able to solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.*

Solve equations and inequalities in one variable.

**A.REI.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

*The Proficient student is able to solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.*

**A.REI.4** Solve quadratic equations in one variable.

**A.REI.4b** Solve quadratic equations by inspection (e.g., for  $x^2 = 49$ ), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$ .

*The Proficient student is able to solve quadratic equations in one variable.*

**B.** Solve quadratic equations by inspection (e.g., for  $x^2 = 49$ ), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$ .











