College Algebra Learning Targets Khan Academy videos

P.1a apply the order of operations to evaluate and [simplify an expression with or without the distributive property](https://www.khanacademy.org/math/algebra/introduction-to-algebra/alg1-manipulating-expressions/e/combining_like_terms_2)P.1b [state the intersection and union of given sets](https://www.khanacademy.org/math/statistics-probability/probability-library/basic-set-ops/e/basic_set_notation)P.2 [apply exponent properties for products and quotients](https://www.khanacademy.org/math/algebra/rational-exponents-and-radicals/alg1-exp-prop-review/e/powers-of-powers-int-exp) , [properties for zero and negative exponents](https://www.khanacademy.org/math/pre-algebra/exponents-radicals/exponent-properties/e/properties-of-integer-exponents) and [expressions in scientific notation](https://www.khanacademy.org/math/pre-algebra/pre-algebra-exponents-radicals/pre-algebra-computing-scientific-notation/e/multiplying_and_dividing_scientific_notation)P.3 [simplify radical expressions](https://www.khanacademy.org/math/algebra/rational-exponents-and-radicals/alg1-simplify-square-roots/e/adding_and_subtracting_radicals) and [rational (fraction) exponents](https://www.khanacademy.org/math/algebra/rational-exponents-and-radicals/rational-exponents-intro/e/exponents_3)P.4 [add, subtract,](https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/adding-and-subtracting-polynomials-review/e/adding-and-subtracting-polynomials-2) and [multiply polynomials](https://www.khanacademy.org/math/algebra/introduction-to-polynomial-expressions/multiplying-binomials-2/e/multiply-binomials-coefficient)P.5 [factor polynomials with](https://www.khanacademy.org/math/algebra/polynomial-factorization/factoring-quadratics-1/e/factoring_polynomials_1) and [without a leading coefficient of 1](https://www.khanacademy.org/math/algebra/polynomial-factorization/factoring-quadratics-2/e/factoring_polynomials_by_grouping_1)P.6 [add/subtract](https://www.khanacademy.org/math/algebra2/rational-expressions-equations-and-functions/adding-and-subtracting-rational-expressions/e/adding_and_subtracting_rational_expressions_3) and [multiply/divide rational expressions](https://www.khanacademy.org/math/algebra2/rational-expressions-equations-and-functions/multiplying-and-dividing-rational-expressions/e/multiplying_and_dividing_rational_expressions_2)---------------------------------------------------------------------------------------------------------------------------------

1.1a [graph by making a table](https://www.khanacademy.org/math/algebra-basics/core-algebra-graphing-lines-slope/solutions-graphs-two-variable-equations/e/graphing-solutions-to-two-variable-linear-equations) and identify the x and y-intercepts from a graph
1.1b [interpret a graph in context](https://www.khanacademy.org/math/algebra/algebra-functions/interpreting-features-of-graphs/e/interpret-features-func-2)1.2 [solve multi-step equations](https://www.khanacademy.org/math/algebra/one-variable-linear-equations/alg1-equations-with-parentheses/e/multi-step-equations-rational) with consistent/inconsistent solutions and [rational equations](https://www.khanacademy.org/math/algebra-home/alg-rational-expr-eq-func/alg-solving-rational-equations/e/rational-equations-3)1.3 translate a verbal description to an equation and solve (steps for problem solving)
1.4 [add/subtract](https://www.khanacademy.org/math/algebra2/introduction-to-complex-numbers-algebra-2/adding-and-subtracting-complex-numbers-algebra-2/e/adding_and_subtracting_complex_numbers) and [multiply](https://www.khanacademy.org/math/algebra2/introduction-to-complex-numbers-algebra-2/multiplying-complex-numbers-algebra-2/e/multiplying_complex_numbers) and [divide](https://www.khanacademy.org/math/precalculus/imaginary-and-complex-numbers/complex-conjugates-and-dividing-complex-numbers/e/dividing_complex_numbers) complex numbers
1.5a [solve a quadratic equation by factoring](https://www.khanacademy.org/math/algebra/quadratics/solving-quadratic-equations-by-factoring/e/solving_quadratics_by_factoring)1.5b [solve a quadratic equation by using a square root](https://www.khanacademy.org/math/algebra/quadratics/quadratics-square-root/e/solving_quadratics_by_taking_the_square_root)1.5c [solve a quadratic equation by completing the square](https://www.khanacademy.org/math/algebra/quadratics/completing_the_square/e/completing_the_square_1)1.5d [solve a quadratic equation by using the quadratic formula](https://www.khanacademy.org/math/algebra/quadratics/quadratic-formula/e/quadratic_equation)1.5e [interpret the discriminant in terms of the number of solutions or x-intercepts](https://www.khanacademy.org/math/algebra2/polynomial_and_rational/quad_formula_tutorial/v/discriminant-of-quadratic-equations)1.6a [solve radical equations](https://www.khanacademy.org/math/algebra2/radical-equations-and-functions/solving-square-root-equations/e/solve-square-root-equations-basic)1.6b solve equations with rational exponents (sorry, no Math Gym for this one)
1.6c [solve absolute value equations](https://www.khanacademy.org/math/algebra/absolute-value-equations-functions/absolute-value-equations/e/absolute_value_equations)1.7a [solve and graph compound linear inequalities](https://www.khanacademy.org/math/algebra/one-variable-linear-inequalities/compound-inequalities/e/compound_inequalities) while using intersections and unions of intervals
1.7b solve and graph absolute value inequalities after watching this [video](https://www.khanacademy.org/math/algebra-home/alg-absolute-value/alg-absolute-value-inequalities/v/absolute-value-inequalities-example-2), about this learning target if you wish to improve)

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2.1 determine if a relation is a function from [tables](https://www.khanacademy.org/math/algebra/algebra-functions/recognizing-functions-ddp/e/recognizing_functions) and [graphs](https://www.khanacademy.org/math/algebra/algebra-functions/recognizing-functions-ddp/e/recog-func-2) and [interpret/evaluate function notation](https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-relationships-functions/cc-8th-function-notation/e/functions_1)2.2a determine if a function is [odd or even from a graph](https://www.khanacademy.org/math/algebra2/polynomial-functions/introduction-to-symmetry-of-functions/e/even_and_odd_functions) and [equation](https://www.khanacademy.org/math/algebra2/polynomial-functions/symmetry-of-polynomial-functions/e/determine-if-a-polynomial-is-even-or-odd) and where it is increasing or decreasing
2.2b [graph piecewise functions](https://www.khanacademy.org/math/algebra/algebra-functions/piecewise-functions/e/piecewise-graphs-linear)2.3 find the equation of a regression line and write it in [slope-intercept](https://www.khanacademy.org/math/algebra/two-var-linear-equations/writing-slope-intercept-equations/e/slope-intercept-equation-from-two-points) and [point-slope form](https://www.khanacademy.org/math/algebra/two-var-linear-equations/point-slope/e/converting_between_point_slope_and_slope_intercept)2.4a [write equations of parallel and perpendicular lines](https://www.khanacademy.org/math/geometry/hs-geo-analytic-geometry/hs-geo-parallel-perpendicular-eq/e/writing-equations-for-parallel-or-perpendicular-lines)2.4b [calculate the average rate of change of a function over an interval](https://www.khanacademy.org/math/algebra/algebra-functions/functions-average-rate-of-change/e/avg-rate-of-change)2.5 [graph using function transformations](https://www.khanacademy.org/math/algebra2/manipulating-functions/stretching-functions/e/shifting_and_reflecting_functions)2.6 combine functions through the 4 operations ([4 videos can be found here](https://www.khanacademy.org/math/algebra2/manipulating-functions/combining-functions/v/sum-of-functions)) and [compose functions](https://www.khanacademy.org/math/algebra2/manipulating-functions/funciton-composition/e/compose-functions)2.7 find the inverse [function equation](https://www.khanacademy.org/math/algebra2/manipulating-functions/finding-inverse-functions/e/algebraically-finding-inverses) and [graph](https://www.khanacademy.org/math/algebra2/manipulating-functions/introduction-to-inverses-of-functions/e/understanding-inverse-functions)---------------------------------------------------------------------------------------------------------------------------------

3.1a [factor quadratics to pick out key features](https://www.khanacademy.org/math/algebra/quadratics/features-of-quadratic-functions/e/rewriting-expressions-to-reveal-information) and [then graph them](https://www.khanacademy.org/math/algebra/quadratics/graphing-quadratic-functions/e/graph-quadratic-functions-in-factored-form)3.1b [graph quadratics in vertex form](https://www.khanacademy.org/math/algebra/quadratics/vertex-form-alg1/e/graphing_parabolas_1)3.1c [graph quadratics by using -b/2a to find the vertex](https://www.khanacademy.org/math/algebra/quadratics/graphing-quadratic-functions/e/graphing_parabolas_0.5)3.2 [graph polynomial functions by finding their zeros](https://www.khanacademy.org/math/algebra2/polynomial-functions/zeros-of-polynomials-and-their-graphs/e/using-zeros-to-graph-polynomials) and [using their end behavior](https://www.khanacademy.org/math/algebra2/polynomial-functions/polynomial-end-behavior/e/determine-the-end-behavior-of-polynomials)3.3 [use long](https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/long-division-of-polynomials/v/dividing-polynomials-1) or [synthetic division](https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/synthetic-division-of-polynomials/v/synthetic-division-example-2) to divide polynomials to find the roots (watch, take notes
3.4 use the Linear Factorization Theorem to construct polynomials with given zeros and point
3.5 graph rational functions (watch [video](https://www.khanacademy.org/math/algebra2/rational-expressions-equations-and-functions/graphs-of-rational-functions/v/another-rational-function-graph-example) See Goody with and without slant asymptotes
\*\*\*I would recommend skipping 3.6 as I don’t see the benefit

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4.1a [graph exponential functions and their transformations](https://www.khanacademy.org/math/algebra2/exponential-and-logarithmic-functions/graphs-of-exponential-functions/e/graphs-of-exponential-functions)4.1b write exponential equations for compounding and continuous exponentials (watch [video](https://www.youtube.com/watch?v=yAbK73qrKms), take notes See Goody)
4.2a [evaluate logarithms](https://www.khanacademy.org/math/algebra2/exponential-and-logarithmic-functions/introduction-to-logarithms/e/logarithms_1)4.2b [graph logarithms](https://www.khanacademy.org/math/algebra2/exponential-and-logarithmic-functions/graphs-of-logarithmic-functions/e/graphs-of-exponentials-and-logarithms) and understand they are the inverse function of exponentials
4.3 [use properties of logarithms](https://www.khanacademy.org/math/algebra2/exponential-and-logarithmic-functions/properties-of-logarithms/e/logarithms_2)4.4 [solve exponential equations using logarithms](https://www.khanacademy.org/math/algebra2/exponential-and-logarithmic-functions/solving-exponential-equations-with-logarithms/e/using-logarithms-to-solve-exponential-equations) and solve logarithm equations using the definition ([video](https://www.youtube.com/watch?v=59j0ALU3N7k))
4.5 write an exponential equation given two points (copy Example 1 from pg 495 and then see Goody)

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5.1 solve a system of equations by [substitution](https://www.khanacademy.org/math/algebra/systems-of-linear-equations/solving-systems-of-equations-with-substitution/e/systems_of_equations_with_substitution) and [elimination](https://www.khanacademy.org/math/algebra/systems-of-linear-equations/equivalent-systems-of-equations/e/systems_of_equations_with_elimination)5.2 solve a system of linear equations in three variables (copy notes from [video](https://www.khanacademy.org/math/algebra-home/alg-system-of-equations/alg-systems-with-three-variables/v/systems-of-three-variables-2) and see Goody)
5.4 solve a system of nonlinear equations using [graphing](https://www.khanacademy.org/math/algebra2/advanced-functions/systems-of-quadratic-equations/v/non-linear-systems-of-equations-1), substitution and elimination (watch video and see Goody)
5.5 graph systems of [linear](https://www.khanacademy.org/math/algebra/two-variable-linear-inequalities/graphing-inequalities/e/graphing_systems_of_inequalities_2) and nonlinear inequalities
5.6 conduct linear programming to maximize or minimize the objective function (watch [video](https://www.youtube.com/watch?v=-32jcGMpD2Q) and see Goody)