Alabama Mathematics

Grades 9-12: Algebra

Adopted 2019

Algebra

A. Write expressions in equivalent forms to solve problems. PC.A.A

15. 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, extending to infinite geometric series. PC.A.A.15

B. Understand the relationship between zeros and factors of polynomials. PC.A.B

16. Derive and apply the Remainder Theorem: For a polynomial p(x) and a number a, the remainder on division by x – a is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x). PC.A.B.16

C. Use polynomial identities to solve problems. PC.A.C

17. Know and apply the Binomial Theorem for the expansion of (x + y) ⁿ in powers of x and y for a positive integer, n, where x and y are any numbers. PC.A.C.17

D. Rewrite rational expressions. PC.A.D

18. 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 cases, a computer algebra system. PC.A.D.18

19. Add, subtract, multiply, and divide rational expressions. PC.A.D.19

    a. Explain why rational expressions form a system analogous to the rational numbers, which is closed under addition, subtraction, multiplication, and division by a non-zero rational expression. PC.A.D.19.A

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

20. Explain each step in solving an equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a clear-cut solution. Construct a viable argument to justify a solution method. Include equations that may involve linear, quadratic, polynomial, exponential, logarithmic, absolute value, radical, rational, piecewise, and trigonometric functions, and their inverses. PC.A.E.20

Skip to main content

21. Solve simple rational equations in one variable, and give examples showing how extraneous solutions may arise. PC.A.E.21

F. Solve systems of equations. PC.A.F

22. Represent a system of linear equations as a single matrix equation in a vector variable. PC.A.F.22

23. Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 x 3 or greater). PC.A.F.23