Mathematics Assessment Program
College and Career Readiness
Mathematics

Short Tasks: Arithmetic with Polynomials and Rational Expressions 1

1. Simplify \( \frac{a^2 - b^2}{a + b} \).

2. Expand and simplify \((x^3 + 3x^2 - 2x + 5)(x - 7)\).

3. Using the Remainder Theorem, decide whether \(x - 5\) and \(x + 2\) are factors of the polynomial \(f(x) = 2x^3 - 5x^2 - 28x + 15\).

4. Identify the zeros of \(f(x) = -x^2 - 3x + 4 = -(x + 4)(x - 1)\).
   Sketch a rough graph of \(f(x)\).