

Problem 1. (Synthetic Division)

Use synthetic division to find the value of the given function at the given point.

(a) $f(x) = x^3 - 11x^2 + 34x - 13$ at $x = 5$

(b) $f(x) = x^4 - 4x^3 + 2x^2 + 2x + 2$ at $x = 2$

(c) $f(x) = x^5 - 4x^4 - 9x^3 + 11x^2 + 13x$ at $x = -2$

(d) $f(x) = 3x^5 + 16x^4 - 15x^3 - 22x^2 - 23x - 4$ at $x = -6$

(e) $f(x) = x^6 + 4x^5 - 5x^4 - 4x^3 - 14x^2 + 35x + 28$ at $x = -5$

Problem 2. (Dividing Polynomials)

Let $g(x) = x^3 - 3x^2 + 2x - 7$ and $f(x) = x - 5$. Find the quotient and remainder when g is divided by f .

Problem 3. (Dividing Polynomials)

Let $g(x) = x^5 - 3x^3 + 2x + 4$ and $f(x) = x - 2$. Find the quotient and remainder when g is divided by f .

Problem 4. (Dividing Polynomials)

Let $g(x) = x^4 + x^3 - 3x^2 + 2x - 7$ and $f(x) = x^2 - 5x + 2$. Find the quotient and remainder when g is divided by f .