6.2 Evaluation of Polynomials

For a polynomial p(x), evaluation at a particular number means replacing the variable with the number then calculating the result.

Example For $p(x) = 2x^2 + 3x - 7$, find p(4).
$p(4) = 2(4)^2 + 3(4) - 7 = 32 + 12 - 7 = 44 - 7 = 37$.

When evaluating a polynomial for negative numbers, parenthesis are helpful to avoid errors of sign.

Example For $g(x) = x^3 - 5x^2 + 6x - 5$, find g(-2).
$g(-2) = (-2)^3 - 5(-2)^2 + 6(-2) - 5 = -8-20-12-5 = -28-12-5 = -40-5 = -45$.

Exercises

1. For $p(x) = 3x^2 - 6x + 10$, p(-2) =
2. For $f(x) = x^3 + x^2 + x - 1$, f(2) =
3. For $g(x) = x^4 - x - 1$, g(3)=
4. For $h(x) = 41.2x^2 + 26.9x + 13.1$, h(3.05) =
5. For $f(x) = 3x^2 - 5x + 6$ and $g(x) = -x^3 + 8x - 12$, find $h(x) = f(x) - g(x)$.
6. Simplify: $(2x^2 - 5x + 9) + (4x^2 + x + 3)$
7. Simplify: $(3x - 1) - (4x^2 - 5x - 10)$
8. Simplify: $(3x^3 - 6x^2 + 5x + 4)$- $(2x^2 - 3x + 10)$
9. If f(x) is a fourth degree polynomial and g(x) is a second degree polynomial, what is the degree of the polynomial Q(x) where Q(x) = f(x) + g(x) ?
10. Create a 7th degree polynomial with 5 terms.