

Methodentests Polynomrechner

1. Test der Operationen mit $f(x) = 2x^2 - 8$

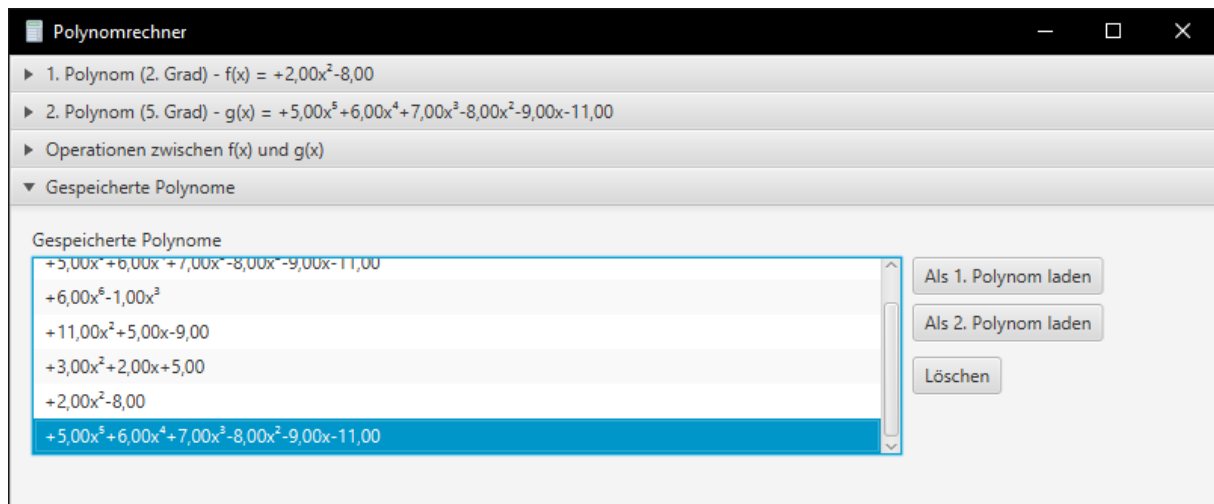
Getestet wurden Speichern, Berechnung des Funktionswertes (klassisch, Horner), 1. Ableitung, Polynomdivision nach Horner und das Speichern in Datei

The screenshot shows the 'Polynomrechner' window with the first polynomial defined as $f(x) = 2x^2 - 8$. The coefficients are entered in the top row: x^6 (empty), x^5 (empty), x^4 (empty), x^3 (empty), x^2 (2), x (0), and constant (-8). The results section shows: $f(x) = 0.0$ at $x = 2$, $f'(x) = +4,00x$, Horner'schema = 192.0, and Polynomdivision = $+2,00x - 4,00$. Buttons for 'Speichern', 'Berechnen', 'Ableiten', 'Horner', 'Division', and 'In Datei speichern' are visible. The bottom section shows expandable options for '2. Polynom', 'Operationen zwischen f(x) und g(x)', and 'Gespeicherte Polynome'.

This screenshot shows the 'Gespeicherte Polynome' section expanded. It lists five stored polynomials: $+5,00x^5 + 6,00x^4 + 7,00x^3 - 8,00x^2 - 9,00x - 11,00$, $+6,00x^5 - 1,00x^3$, $+11,00x^2 + 5,00x - 9,00$, $+3,00x^2 + 2,00x + 5,00$, and $+2,00x^2 - 8,00$ (which is highlighted in blue). To the right are buttons: 'Als 1. Polynom laden', 'Als 2. Polynom laden', and 'Löschen'.

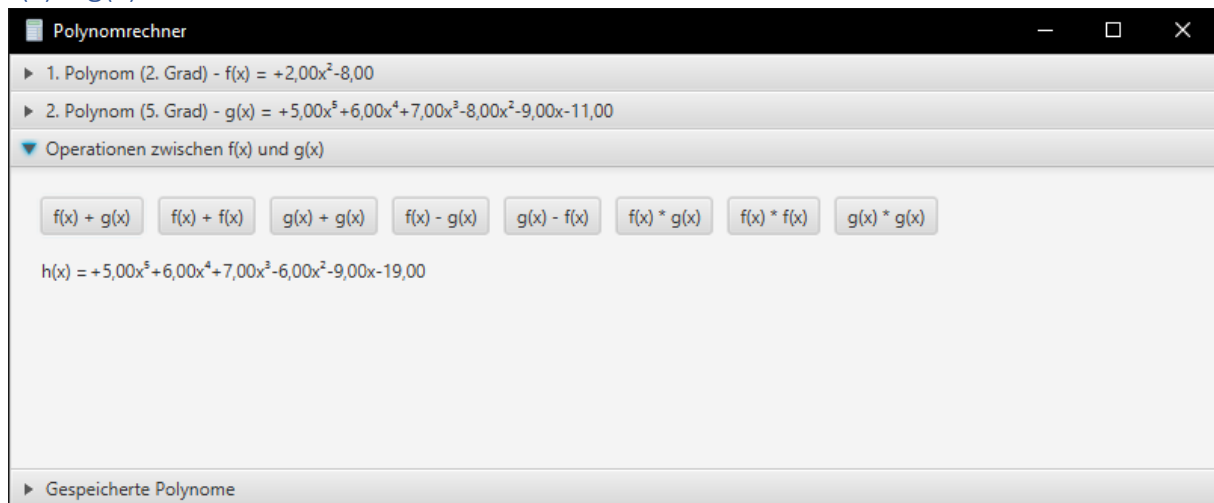
2. Test der Operationen mit $g(x) = 5x^5 + 6x^4 + 7x^3 - 8x^2 - 9x - 11$

The screenshot shows the 'Polynomrechner' window with the second polynomial defined as $g(x) = 5x^5 + 6x^4 + 7x^3 - 8x^2 - 9x - 11$. The coefficients are entered in the top row: x^6 (0.0), x^5 (5.0), x^4 (6.0), x^3 (7.0), x^2 (-8.0), x (-9.0), and constant (-11.0). The results section shows: $g(x) = 19994.0$ at $x = 5$, $g'(x) = +25,00x^4 + 24,00x^3 + 21,00x^2 - 16,00x - 9,00$, Horner'schema = 19994.0, and Polynomdivision = $+5,00x^4 + 16,00x^3 + 39,00x^2 + 70,00x + 131,00 + 251,00/(x-2,00)$. Buttons for 'Speichern', 'Berechnen', 'Ableiten', 'Horner', 'Division', and 'In Datei speichern' are visible. The bottom section shows expandable options for 'Operationen zwischen f(x) und g(x)' and 'Gespeicherte Polynome'.

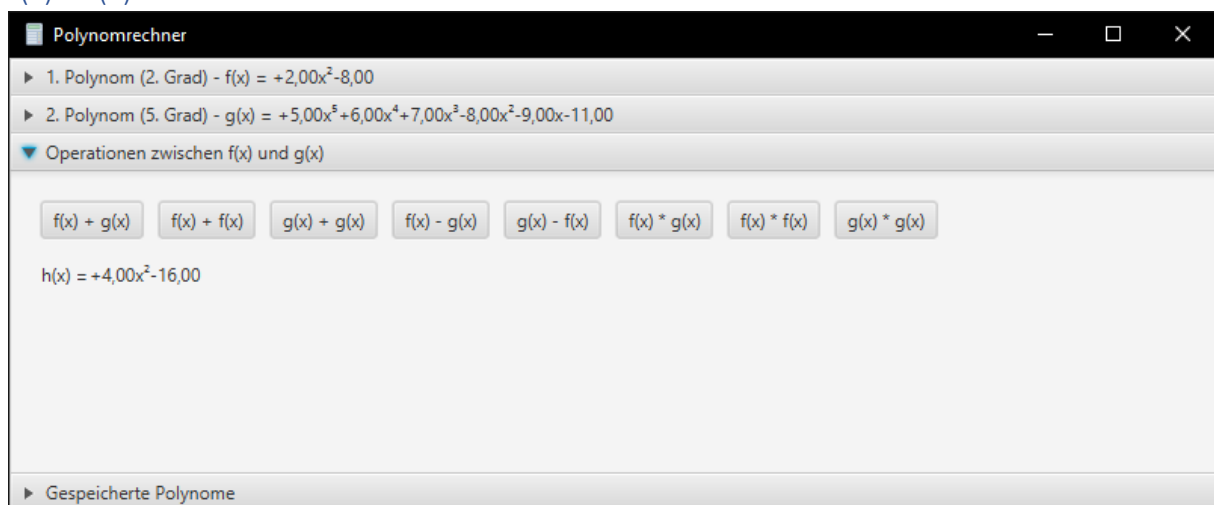


3. Tests zwischen $f(x)$ und $g(x)$

$f(x) + g(x)$



$f(x) + f(x)$



$$g(x) + g(x)$$

Polynomrechner

1. Polynom (2. Grad) - $f(x) = +2,00x^2 - 8,00$

2. Polynom (5. Grad) - $g(x) = +5,00x^5 + 6,00x^4 + 7,00x^3 - 8,00x^2 - 9,00x - 11,00$

Operationen zwischen $f(x)$ und $g(x)$

$h(x) = +10,00x^5 + 12,00x^4 + 14,00x^3 - 16,00x^2 - 18,00x - 22,00$

Gespeicherte Polynome

$$f(x) - g(x)$$

Polynomrechner

1. Polynom (2. Grad) - $f(x) = +2,00x^2 - 8,00$

2. Polynom (5. Grad) - $g(x) = +5,00x^5 + 6,00x^4 + 7,00x^3 - 8,00x^2 - 9,00x - 11,00$

Operationen zwischen $f(x)$ und $g(x)$

$h(x) = -5,00x^5 - 6,00x^4 - 7,00x^3 + 10,00x^2 + 9,00x + 3,00$

Gespeicherte Polynome

$$g(x) - f(x)$$

Polynomrechner

1. Polynom (2. Grad) - $f(x) = +2,00x^2 - 8,00$

2. Polynom (5. Grad) - $g(x) = +5,00x^5 + 6,00x^4 + 7,00x^3 - 8,00x^2 - 9,00x - 11,00$

Operationen zwischen $f(x)$ und $g(x)$

$h(x) = +5,00x^5 + 6,00x^4 + 7,00x^3 - 10,00x^2 - 9,00x - 3,00$

Gespeicherte Polynome

$$f(x) * g(x)$$

Polynomrechner

1. Polynom (2. Grad) - $f(x) = +2,00x^2 - 8,00$

2. Polynom (5. Grad) - $g(x) = +5,00x^5 + 6,00x^4 + 7,00x^3 - 8,00x^2 - 9,00x - 11,00$

Operationen zwischen $f(x)$ und $g(x)$

$h(x) = +10,00x^7 + 12,00x^6 - 26,00x^5 - 64,00x^4 - 74,00x^3 + 42,00x^2 + 72,00x + 88,00$

Gespeicherte Polynome

$$f(x) * f(x)$$

Polynomrechner

1. Polynom (2. Grad) - $f(x) = +2,00x^2 - 8,00$

2. Polynom (5. Grad) - $g(x) = +5,00x^5 + 6,00x^4 + 7,00x^3 - 8,00x^2 - 9,00x - 11,00$

Operationen zwischen $f(x)$ und $g(x)$

$h(x) = +4,00x^4 - 32,00x^2 + 64,00$

Gespeicherte Polynome

$$g(x) * g(x)$$

Polynomrechner

1. Polynom (2. Grad) - $f(x) = +2,00x^2 - 8,00$

2. Polynom (5. Grad) - $g(x) = +5,00x^5 + 6,00x^4 + 7,00x^3 - 8,00x^2 - 9,00x - 11,00$

Operationen zwischen $f(x)$ und $g(x)$

$h(x) = +25,00x^{10} + 60,00x^9 + 106,00x^8 + 4,00x^7 - 137,00x^6 - 330,00x^5 - 194,00x^4 - 10,00x^3 + 257,00x^2 + 198,00x + 121,00$

Gespeicherte Polynome

Laden von Polynomen

Laden in 1. Polynom

The screenshot shows the 'Polynomrechner' application window. The 'Gespeicherte Polynome' list contains the following polynomials:

- +5,00x⁵+6,00x⁴+7,00x³-8,00x²-9,00x-11,00
- +6,00x⁵-1,00x³
- +11,00x²+5,00x-9,00
- +3,00x²+2,00x+5,00
- +2,00x²-8,00
- +5,00x⁵+6,00x⁴+7,00x³-8,00x²-9,00x-11,00

The '1. Polynom (2. Grad) - f(x) = +11,00x²+5,00x-9,00' is selected. The input fields for f(x) are:

f(x) = x⁶ + x⁵ + x⁴ + x³ + x² + x +

The buttons 'Speichern', 'Berechnen', 'Ableiten', 'Horner', 'Division', and 'In Datei speichern' are visible.

Laden in 2. Polynom

The screenshot shows the 'Polynomrechner' application window. The 'Gespeicherte Polynome' list contains the same polynomials as the previous screenshot. The second polynomial, '+3,00x²+2,00x+5,00', is now selected and highlighted. The '1. Polynom' section is still visible but not active.

Polynomrechner

► 1. Polynom (2. Grad) - $f(x) = +11,00x^2 + 5,00x - 9,00$

▼ 2. Polynom (2. Grad) - $f(x) = +3,00x^2 + 2,00x + 5,00$

$g(x) =$ $x^5 +$ $x^5 +$ $x^4 +$ $x^3 +$ $x^2 +$ $x +$

$g(x) =$

$g'(x) =$

Hornerschema

Polynomdivision

► Operationen zwischen $f(x)$ und $g(x)$

► Gespeicherte Polynome

Fazit

Alle Tests wurden erfolgreich ohne Fehler durchgeführt.