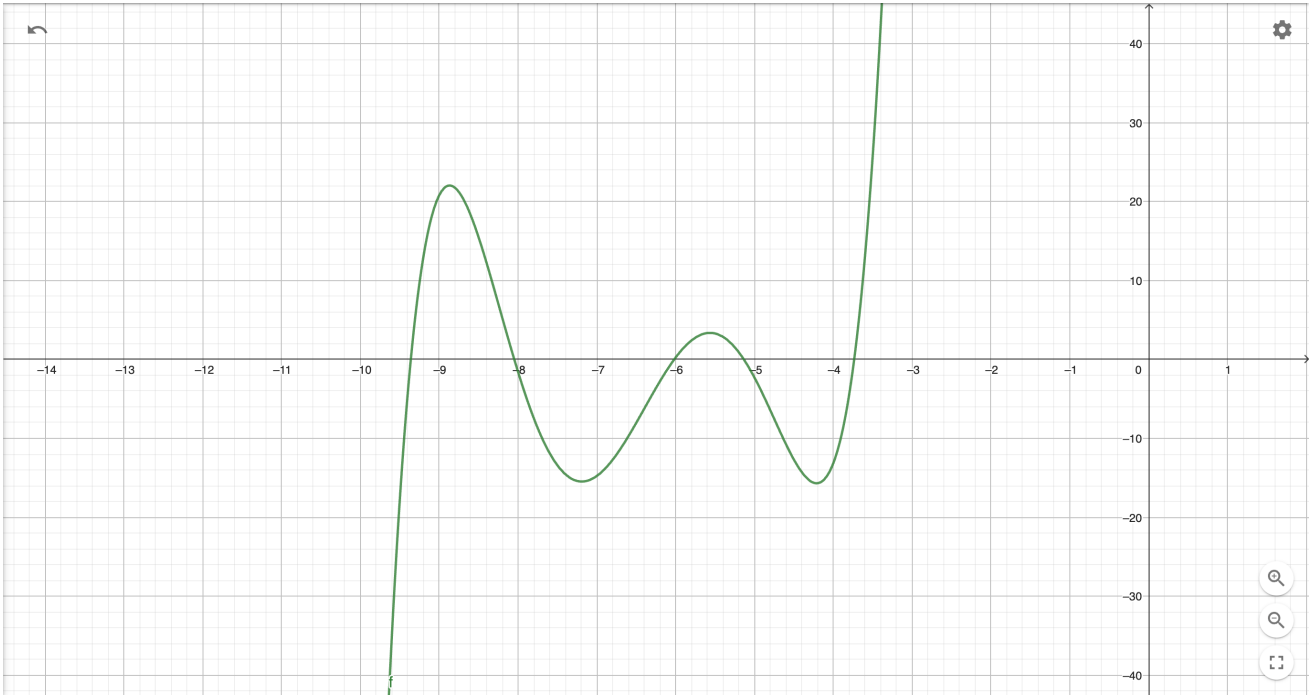


Gráfico da função: $f(x) = x^5 + 32.2994x^4 + 407.148x^3 + 2500.89x^2 + 7478.64x + 8700.01$



Método da bissecção: Determinação da raiz z_1

k	a_k	x_k	b_k	$f(a_k)$	$f(x_k)$	$f(b_k)$	ER_k
0	-10	-9.5	-9	-151.39	-17.7260375	20.8114	—
1	-9.5	-9.25	-9	-17.7260375	9.740536719	20.8114	0.02702702703
2	-9.5	-9.375	-9.25	-17.7260375	-1.535959473	9.740536719	0.01333333333
3	-9.375	-9.3125	-9.25	-1.535959473	4.662334517	9.740536719	0.006711409396
4	-9.375	-9.34375	-9.3125	-1.535959473	1.70976081	4.662334517	0.003344481605
5	-9.375	-9.359375	-9.34375	-1.535959473	0.1243821688	1.70976081	0.001669449082
6	-9.375	-9.3671875	-9.359375	-1.535959473	-0.6963123737	0.1243821688	0.000834028357
7	-9.3671875	-9.36328125	-9.359375	-0.6963123737	-0.2836093215	0.1243821688	0.0004171881519
8	-9.36328125	-9.361328125	-9.359375	-0.2836093215	-0.07902628777	0.1243821688	0.0002086375965
9	-9.361328125	-9.360351562	-9.359375	-0.07902628777	0.02282455583	0.1243821688	0.0001043296818
10	-9.361328125	-9.360839844	-9.360351562	-0.07902628777	-0.02806418632	0.02282455583	$5.216211987 \times 10^{-5}$
11	-9.360839844	-9.360595703	-9.360351562	-0.02806418632	-0.002610648526	0.02282455583	$2.608174017 \times 10^{-5}$
12	-9.360595703	-9.360473633	-9.360351562	-0.002610648526	0.01010924491	0.02282455583	$1.304104015 \times 10^{-5}$
13	-9.360595703	-9.360534668	-9.360473633	-0.002610648526	0.003749871021	0.01010924491	$6.52047756 \times 10^{-6}$
14	-9.360595703	-9.360565186	-9.360534668	-0.002610648526	0.0005697544602	0.003749871021	$3.260228151 \times 10^{-6}$
15	-9.360595703	-9.360580444	-9.360565186	-0.002610648526	-0.001020411199	0.0005697544602	$1.630111418 \times 10^{-6}$
16	-9.360580444	-9.360572815	-9.360565186	-0.001020411199	-0.0002253194634	0.0005697544602	$8.150563734 \times 10^{-7}$

Raiz $z_1 = -9.360572815$

Método de Newton: Determinação da raiz z_2

k	x_k	$f(x_k)$	$f'(x_k)$	ER_k
0	-8	-1.5836	-32.3552	-
1	-8.048944219	0.02784811205	-33.45882937	0.006080824744
2	-8.048111909	$7.077213013 \times 10^{-6}$	-33.44181283	0.0001034167794
3	-8.048111698	$-1.637090463 \times 10^{-11}$	-33.4418085	$2.629531992 \times 10^{-8}$

Raíz $z_2 = -8.048111698$

Método da secante: Determinação da raiz z_3

k	x_k	$f(x_k)$	ER_k
0	-6.5	-8.0255375	-
1	-6	0.2644	0.083333333333
2	-6.015947044	0.05011292769	0.002650795314
3	-6.019676402	-0.0007936156053	0.0006195278835
4	-6.019618262	$2.274229701 \times 10^{-6}$	$9.658321171 \times 10^{-6}$
5	-6.019618428	$1.000444172 \times 10^{-10}$	$2.759834245 \times 10^{-8}$

Raíz $z_3 = -6.019618428$

Método da falsa posição: Determinação da raiz z_4

k	a_k	x_k	b_k	$f(x_k)$	ER_k
0	-5.5	-5.294473684	-4.5	2.016191443	—
1	-5.294473684	-5.185756397	-4.5	0.7312520121	0.02096459592
2	-5.185756397	-5.148469714	-4.5	0.2003555447	0.007242284524
3	-5.148469714	-5.138411998	-4.5	0.04970278125	0.001957358861
4	-5.138411998	-5.135926664	-4.5	0.0119985632	0.0004839114365
5	-5.135926664	-5.135327255	-4.5	0.00287700146	0.0001167227681
6	-5.135327255	-5.135183562	-4.5	0.0006887181571	$2.798210185 \times 10^{-5}$
7	-5.135183562	-5.135149165	-4.5	0.0001648059388	$6.698247241 \times 10^{-6}$
8	-5.135149165	-5.135140934	-4.5	$3.943333104 \times 10^{-5}$	$1.602830385 \times 10^{-6}$
9	-5.135140934	-5.135138965	-4.5	$9.435052561 \times 10^{-6}$	$3.835102661 \times 10^{-7}$

Raiz $z_4 = -5.135138965$

Método de Horner: Determinação da raiz z_5

Coeficientes b_i do Polinômio $f(x)$

k	$b_{5,k}$	$b_{4,k}$	$b_{3,k}$	$b_{2,k}$	$b_{1,k}$	$b_{0,k}$
0	1.000000000	28.29940000	293.9504000	1325.088400	2178.286400	-13.13560000
1	1.000000000	28.80505102	306.4930994	1429.896151	2482.083845	26.74285335
2	1.000000000	28.62436281	301.9524020	1391.203692	2365.914688	5.185521789
3	1.000000000	28.56859016	300.5640226	1379.542786	2331.828195	0.4024155078
4	1.000000000	28.56348014	300.4371273	1378.480970	2328.745569	0.003178852578
5	1.000000000	28.56343913	300.4361090	1378.472452	2328.720855	$2.036667865 \times 10^{-7}$

Coeficientes c_i do Polinômio $f'(x)$

k	$c_{5,k}$	$c_{4,k}$	$c_{3,k}$	$c_{2,k}$	$c_{1,k}$
0	1.000000000	24.29940000	196.7528000	538.0772000	25.97760000
1	1.000000000	25.31070204	218.0486736	667.9579918	148.0055195
2	1.000000000	24.94932561	210.2627024	618.4804397	92.97606880
3	1.000000000	24.83778031	207.8989873	603.9111971	78.75035547
4	1.000000000	24.82756028	207.6833518	602.5926112	77.50786589
5	1.000000000	24.82747825	207.6816217	602.5820392	77.49793425

Estimativas

k	x_k	$f(x_k)$	$f'(x_k)$	ER_k
0	-4	-13.13560000	25.97760000	-
1	-3.494348978	26.74285335	148.0055195	0.1447053588
2	-3.675037194	5.185521789	92.97606880	0.04916636403
3	-3.730809845	0.4024155078	78.75035547	0.01494920749
4	-3.735919860	0.003178852578	77.50786589	0.001367806409
5	-3.735960873	$2.036667865 \times 10^{-7}$	77.49793425	0.00001097797631
6	-3.735960876	-	-	$7.034411090 \times 10^{-10}$

Raiz $z_5 = -3.735960876$