

Atividade 2 – Aproximação de Derivadas pelo Método de Diferenças Finitas

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1 Questão 1

Tabela 1: Questão 1 – Aproximações por diferenças finitas e erros relativos

x	Deriv. Exata	Forward	E.R. Fwd	Backward	E.R. Bwd	Central	E.R. Ctr
0.3	-10.198517	-7.368327	0.277510	-15.801803	0.549422	-11.585065	0.135956
0.4	-5.230237	-3.919534	0.250573	-7.368327	0.408848	-5.643908	0.079138
0.5	-2.856007	-2.119266	0.257983	-3.919534	0.372382	-3.019732	0.057200
0.6	-1.489097	-1.114425	0.321149	-2.119266	0.422375	-1.565316	0.050613
0.7	-0.585297	-0.364671	0.599566	-1.114425	0.778054	-0.623406	0.064499
0.8	0.089304	0.375232	3.201712	-0.234671	3.627766	0.070280	0.213207
0.9	0.875322	0.904482	0.392593	0.375232	0.421151	0.639857	0.269229
1.0	1.156181	1.404817	0.215222	0.904482	0.217699	1.154757	0.001238
1.1	1.655217	1.913133	0.155820	1.405017	0.151158	1.753803	0.059013
1.2	1.772947	2.386818	0.129808	1.913133	0.121326	2.188575	0.090948
1.3	2.750890	3.070858	0.116624	2.458618	0.106246	2.764338	0.004889

2 Questão 2

Tabela 2: Questão 2 – Aproximações por diferenças finitas e erros relativos

x	Deriv. Exata	Forward	E.R. Fwd	Backward	E.R. Bwd	Central	E.R. Ctr
0.6	0.390314	0.490515	0.256718	0.291934	0.252053	0.391224	0.002332
0.7	0.599551	0.706660	0.190562	0.499515	0.173594	0.598587	0.004484
0.8	0.827338	0.969863	0.172762	0.706660	0.145863	0.838261	0.013203
0.9	1.127589	1.327709	0.177566	0.969863	0.139813	1.148786	0.018876
1.0	1.557408	1.872616	0.202393	1.327709	0.174488	1.600163	0.027453
1.1	2.249379	2.816971	0.252333	1.872616	0.167497	2.344793	0.042418