



(d) 第1固有値

Bi	平板		円柱		球	
	ζ_1	c_1	ζ_1	c_1	ζ_1	c_1
0.01	0.0998	1.0017	0.1412	1.0025	0.1730	1.0030
0.02	0.1410	1.0033	0.1995	1.0050	0.2445	1.0060
0.03	0.1732	1.0049	0.2439	1.0075	0.2989	1.0090
0.04	0.1987	1.0066	0.2814	1.0099	0.3450	1.0120
0.05	0.2217	1.0082	0.3142	1.0124	0.3852	1.0149
0.06	0.2425	1.0098	0.3438	1.0148	0.4217	1.0179
0.07	0.2615	1.0114	0.3708	1.0173	0.4550	1.0209
0.08	0.2791	1.0130	0.3960	1.0197	0.4860	1.0239
0.09	0.2956	1.0145	0.4195	1.0222	0.5150	1.0268
0.10	0.3111	1.0160	0.4417	1.0246	0.5423	1.0298
0.15	0.3779	1.0237	0.5376	1.0365	0.6608	1.0445
0.20	0.4328	1.0311	0.6170	1.0483	0.7593	1.0592
0.25	0.4801	1.0382	0.6856	1.0598	0.8448	1.0737
0.30	0.5218	1.0450	0.7465	1.0712	0.9208	1.0880
0.40	0.5932	1.0580	0.8516	1.0932	1.0528	1.1164
0.50	0.6533	1.0701	0.9408	1.1143	1.1656	1.1441
0.60	0.7051	1.0814	1.0185	1.1346	1.2644	1.1713
0.70	0.7506	1.0919	1.0873	1.1539	1.3525	1.1978
0.80	0.7910	1.1016	1.1490	1.1725	1.4320	1.2236
0.90	0.8274	1.1107	1.2048	1.1902	1.5044	1.2488
1.0	0.8603	1.1191	1.2558	1.2071	1.5708	1.2732
2.0	1.0769	1.1795	1.5995	1.3384	2.0288	1.4793
3.0	1.1925	1.2102	1.7887	1.4191	2.2889	1.6227
4.0	1.2646	1.2287	1.9081	1.4698	2.4556	1.7201
5.0	1.3138	1.2402	1.9898	1.5029	2.5704	1.7870
6.0	1.3496	1.2479	2.0490	1.5253	2.6537	1.8338
7.0	1.3766	1.2532	2.0937	1.5411	2.7165	1.8674
8.0	1.3978	1.2570	2.1286	1.5526	2.7654	1.8921
9.0	1.4149	1.2598	2.1566	1.5611	2.8044	1.9106
10.0	1.4289	1.2620	2.1795	1.5677	2.8363	1.9249
20.0	1.4961	1.2699	2.2881	1.5919	2.9857	1.9781
30.0	1.5202	1.2717	2.3261	1.5973	3.0372	1.9898
40.0	1.5325	1.2723	2.3455	1.5993	3.0632	1.9942
50.0	1.5400	1.2727	2.3572	1.6002	3.0788	1.9962
100.0	1.5552	1.2731	2.3809	1.6015	3.1102	1.9990
∞	$\pi/2$	$4/\pi$	2.4048	1.6124	π	2.0000

(a) $\zeta \tan \zeta = Bi$

Bi	ζ_1	ζ_2	ζ_3	ζ_4	ζ_5	ζ_6
0	0	π	2π	3π	4π	5π
0.001	0.0316	3.1419	6.2833	9.4249	12.5665	15.7080
0.01	0.0998	3.1448	6.2848	9.4258	12.5672	15.7086
0.1	0.3111	3.1731	7.2991	9.4354	12.5743	15.7143
1.0	0.8603	3.4256	6.4373	9.5293	12.6453	15.7713
10	1.4289	4.3058	7.2281	10.2003	13.2142	16.2594
100	1.5552	4.6658	7.7764	10.8871	13.9981	17.1093
∞	$\pi/2$	$3\pi/2$	$5\pi/2$	$7\pi/2$	$9\pi/2$	$11\pi/2$

(b) $\zeta J_1(\zeta)/J_0(\zeta) = Bi$

Bi	ζ_1	ζ_2	ζ_3	ζ_4	ζ_5	ζ_6
0	0	3.8317	7.0156	10.1735	13.3237	16.4706
0.01	0.1412	3.8343	7.0170	10.1745	13.3244	16.4712
0.1	0.4417	3.8577	7.0298	10.1833	13.3312	16.4767
1.0	1.2558	4.0795	7.1558	10.2710	13.3984	16.5312
10	2.1795	5.0332	7.9569	10.9363	13.9580	17.0099
100	2.3809	5.4652	8.5678	11.6747	14.7834	17.8931
∞	2.4048	5.5201	8.6537	11.7915	14.9309	18.0711

(c) $1 - \zeta \cot \zeta = Bi$

Bi-1	ζ_1	ζ_2	ζ_3	ζ_4	ζ_5	ζ_6
-1.0	0	4.4934	7.7253	10.9041	14.0062	17.2208
-0.99	0.1730	4.4956	7.7265	10.9050	14.0069	17.2213
-0.90	0.5423	4.5157	7.7382	10.9133	14.0733	17.2266
0.0	$\pi/2$	$3\pi/2$	$5\pi/2$	$7\pi/2$	$9\pi/2$	$11\pi/2$
1.0	2.0288	4.9132	7.9787	11.0856	14.2075	17.3364
10	2.8628	5.7607	8.7083	11.7027	14.7335	17.7908
100	3.1105	6.2211	9.3317	12.4426	15.5537	18.6650
∞	π	2π	3π	4π	5π	6π

