Appendix B

Isentropic Flow Tables

TABLE B.1 Isentropic Flow Table ($\gamma = 1.4$)

M	T/T_o	p/p_o	ρ/ρ_o	A/A^*
0.00	1.0000	1.0000	1.0000	∞
0.02	0.9999	0.9997	0.9998	28.9421
0.04	0.9997	0.9989	0.9992	14.4815
0.06	0.9993	0.9975	0.9982	9.6659
0.08	0.9987	0.9955	0.9968	7.2616
0.10	0.9980	0.9930	0.9950	5.8218
0.12	0.9971	0.9900	0.9928	4.8643
0.14	0.9961	0.9864	0.9903	4.1824
0.16	0.9949	0.9823	0.9873	3.6727
0.18	0.9936	0.9776	0.9840	3.2779
0.20	0.9921	0.9725	0.9803	2.9635
0.22	0.9904	0.9668	0.9762	2.7076
0.24	0.9886	0.9607	0.9718	2.4956
0.26	0.9867	0.9541	0.9670	2.3173
0.28	0.9846	0.9470	0.9619	2.1656
0.30	0.9823	0.9395	0.9564	2.0351
0.32	0.9799	0.9315	0.9506	1.9219
0.34	0.9774	0.9231	0.9445	1.8229
0.36	0.9747	0.9143	0.9380	1.7358
0.38	0.9719	0.9052	0.9313	1.6587
0.40	0.9690	0.8956	0.9243	1.5901
0.42	0.9659	0.8857	0.9170	1.5289
0.44	0.9627	0.8755	0.9094	1.4740
0.46	0.9594	0.8650	0.9016	1.4246
0.48	0.9559	0.8541	0.8935	1.3801
0.50	0.9524	0.8430	0.8852	1.3398
0.52	0.9487	0.8317	0.8766	1.3034
0.54	0.9449	0.8201	0.8679	1.2703
0.56	0.9410	0.8082	0.8589	1.2403
0.58	0.9370	0.7962	0.8498	1.2130
0.60	0.9328	0.7840	0.8405	1.1882
0.62	0.9286	0.7716	0.8310	1.1656
0.64	0.9243	0.7591	0.8213	1.1451
0.66	0.9199	0.7465	0.8115	1.1265
0.68	0.9153	0.7338	0.8016	1.1097
0.70	0.9107	0.7209	0.7916	1.0944
0.72	0.9061	0.7080	0.7814	1.0806
0.74	0.9013	0.6951	0.7712	1.0681
0.76	0.8964	0.6821	0.7609	1.0570
0.78	0.8915	0.6691	0.7505	1.0471
0.80	0.8865	0.6560	0.7400	1.0382
0.82	0.8815	0.6430	0.7295	1.0305
0.84	0.8763	0.6300	0.7189	1.0237
0.86	0.8711	0.6170	0.7083	1.0179
0.88	0.8659	0.6041	0.6977	1.0129
0.90	0.8606	0.5913	0.6870	1.0089
0.92	0.8552	0.5785	0.6764	1.0056
0.94	0.8498	0.5658	0.6658	1.0031
0.96	0.8444	0.5532	0.6551	1.0014
0.98	0.8389	0.5407	0.6445	1.0003
1.00	0.8333	0.5283	0.6339	1.0000
1.02	0.8278	0.5160	0.6234	1.0003
1.04	0.8222	0.5039	0.6129	1.0013
1.06	0.8165	0.4919	0.6024	1.0029
1.08	0.8108	0.4800	0.5920	1.0051
1.10	0.8052	0.4684	0.5817	1.0079
1.12	0.7994	0.4568	0.5714	1.0113
1.14	0.7937	0.4455	0.5612	1.0153
1.16	0.7879	0.4343	0.5511	1.0198
1.18	0.7822	0.4232	0.5411	1.0248
1.20	0.7764	0.4124	0.5311	1.0304
1.22	0.7706	0.4017	0.5213	1.0366
1.24	0.7648	0.3912	0.5115	1.0432
1.26	0.7590	0.3809	0.5019	1.0504
1.28	0.7532	0.3708	0.4923	1.0581
1.30	0.7474	0.3609	0.4829	1.0663
1.32	0.7416	0.3512	0.4736	1.0750
1.34	0.7358	0.3417	0.4644	1.0842
1.36	0.7300	0.3323	0.4553	1.0940
1.38	0.7242	0.3232	0.4463	1.1042
1.40	0.7184	0.3142	0.4374	1.1149
1.42	0.7126	0.3055	0.4287	1.1262
1.44	0.7069	0.2969	0.4201	1.1379
1.46	0.7011	0.2886	0.4116	1.1501
1.48	0.6954	0.2804	0.4032	1.1629
1.50	0.6897	0.2724	0.3950	1.1762
1.52	0.6840	0.2646	0.3869	1.1899
1.54	0.6783	0.2570	0.3789	1.2042
1.56	0.6726	0.2496	0.3710	1.2190
1.58	0.6670	0.2423	0.3633	1.2344
1.60	0.6614	0.2353	0.3557	1.2502
1.62	0.6558	0.2284	0.3483	1.2666
1.64	0.6502	0.2217	0.3409	1.2836
1.66	0.6447	0.2151	0.3337	1.3010
1.68	0.6392	0.2088	0.3266	1.3190
1.70	0.6337	0.2026	0.3197	1.3376
1.72	0.6283	0.1966	0.3129	1.3567
1.74	0.6229	0.1907	0.3062	1.3764
1.76	0.6175	0.1850	0.2996	1.3967
1.78	0.6121	0.1794	0.2931	1.4175
1.80	0.6068	0.1740	0.2868	1.4390
1.82	0.6015	0.1688	0.2806	1.4610
1.84	0.5963	0.1637	0.2745	1.4836
1.86	0.5910	0.1587	0.2686	1.5069

TABLE B.1 *(Continued)*

M	T/T_o	p/p_o	ρ/ρ_o	A/A^*
1.88	0.5859	0.1539	0.2627	1.5308
1.90	0.5807	0.1492	0.2570	1.5553
1.92	0.5756	0.1447	0.2514	1.5804
1.94	0.5705	0.1403	0.2459	1.6062
1.96	0.5655	0.1360	0.2405	1.6326
1.98	0.5605	0.1318	0.2352	1.6597
2.00	0.5556	0.1278	0.2300	1.6875
2.02	0.5506	0.1239	0.2250	1.7160
2.04	0.5458	0.1201	0.2200	1.7451
2.06	0.5409	0.1164	0.2152	1.7750
2.08	0.5361	0.1128	0.2104	1.8056
2.10	0.5313	0.1094	0.2058	1.8369
2.12	0.5266	0.1060	0.2013	1.8690
2.14	0.5219	0.1027	0.1968	1.9018
2.16	0.5173	0.0996	0.1925	1.9354
2.18	0.5127	0.0965	0.1882	1.9698
2.20	0.5081	0.0935	0.1841	2.0050
2.22	0.5036	0.0906	0.1800	2.0409
2.24	0.4991	0.0878	0.1760	2.0777
2.26	0.4947	0.0851	0.1721	2.1153
2.28	0.4903	0.0825	0.1683	2.1538
2.30	0.4859	0.0800	0.1646	2.1931
2.32	0.4816	0.0775	0.1609	2.2333
2.34	0.4773	0.0751	0.1574	2.2744
2.36	0.4731	0.0728	0.1539	2.3164
2.38	0.4688	0.0706	0.1505	2.3593
2.40	0.4647	0.0684	0.1472	2.4031
2.42	0.4606	0.0663	0.1439	2.4479
2.44	0.4565	0.0643	0.1408	2.4936
2.46	0.4524	0.0623	0.1377	2.5403
2.48	0.4484	0.0604	0.1346	2.5880
2.50	0.4444	0.0585	0.1317	2.6367
2.52	0.4405	0.0567	0.1288	2.6865
2.54	0.4366	0.0550	0.1260	2.7372
2.56	0.4328	0.0533	0.1232	2.7891
2.58	0.4289	0.0517	0.1205	2.8420
2.60	0.4252	0.0501	0.1179	2.8960
2.62	0.4214	0.0486	0.1153	2.9511
2.64	0.4177	0.0471	0.1128	3.0073
2.66	0.4141	0.0457	0.1103	3.0647
2.68	0.4104	0.0443	0.1079	3.1233
2.70	0.4068	0.0430	0.1056	3.1830
2.72	0.4033	0.0417	0.1033	3.2440
2.74	0.3998	0.0404	0.1010	3.3061
2.76	0.3963	0.0392	0.0989	3.3695
2.78	0.3928	0.0380	0.0967	3.4342
2.80	0.3894	0.0368	0.0946	3.5001
2.82	0.3860	0.0357	0.0926	3.5674
2.84	0.3827	0.0347	0.0906	3.6359
2.86	0.3794	0.0336	0.0886	3.7058
2.88	0.3761	0.0326	0.0867	3.7771
2.90	0.3729	0.0317	0.0849	3.8498
2.92	0.3696	0.0307	0.0831	3.9238
2.94	0.3665	0.0298	0.0813	3.9993
2.96	0.3633	0.0289	0.0796	4.0763
2.98	0.3602	0.0281	0.0779	4.1547
3.00	0.3571	0.0272	0.0762	4.2346

M	T/T_o	p/p_o	ρ/ρ_o	A/A^*
3.02	0.3541	0.0264	0.0746	4.3160
3.04	0.3511	0.0256	0.0730	4.3989
3.06	0.3481	0.0249	0.0715	4.4835
3.08	0.3452	0.0242	0.0700	4.5696
3.10	0.3422	0.0234	0.0685	4.6573
3.12	0.3393	0.0228	0.0671	4.7467
3.14	0.3365	0.0221	0.0657	4.8377
3.16	0.3337	0.0215	0.0643	4.9304
3.18	0.3309	0.0208	0.0630	5.0248
3.20	0.3281	0.0202	0.0617	5.1210
3.22	0.3253	0.0196	0.0604	5.2189
3.24	0.3226	0.0191	0.0591	5.3186
3.26	0.3199	0.0185	0.0579	5.4201
3.28	0.3173	0.0180	0.0567	5.5234
3.30	0.3147	0.0175	0.0555	5.6286
3.32	0.3121	0.0170	0.0544	5.7358
3.34	0.3095	0.0165	0.0533	5.8448
3.36	0.3069	0.0160	0.0522	5.9558
3.38	0.3044	0.0156	0.0511	6.0687
3.40	0.3019	0.0151	0.0501	6.1837
3.42	0.2995	0.0147	0.0491	6.3007
3.44	0.2970	0.0143	0.0481	6.4198
3.46	0.2946	0.0139	0.0471	6.5409
3.48	0.2922	0.0135	0.0462	6.6642
3.50	0.2899	0.0131	0.0452	6.7896
3.52	0.2875	0.0127	0.0443	6.9172
3.54	0.2852	0.0124	0.0434	7.0471
3.56	0.2829	0.0120	0.0426	7.1791
3.58	0.2806	0.0117	0.0417	7.3135
3.60	0.2784	0.0114	0.0409	7.4501
3.62	0.2762	0.0111	0.0401	7.5891
3.64	0.2740	0.0108	0.0393	7.7305
3.66	0.2718	0.0105	0.0385	7.8742
3.68	0.2697	0.0102	0.0378	8.0204
3.70	0.2675	0.0099	0.0370	8.1691
3.72	0.2654	0.0096	0.0363	8.3202
3.74	0.2633	0.0094	0.0356	8.4739
3.76	0.2613	0.0091	0.0349	8.6302
3.78	0.2592	0.0089	0.0342	8.7891
3.80	0.2572	0.0086	0.0335	8.9506
3.82	0.2552	0.0084	0.0329	9.1148
3.84	0.2532	0.0082	0.0323	9.2817
3.86	0.2513	0.0080	0.0316	9.4513
3.88	0.2493	0.0077	0.0310	9.6237
3.90	0.2474	0.0075	0.0304	9.7990
3.92	0.2455	0.0073	0.0299	9.9771
3.94	0.2436	0.0071	0.0293	10.1581
3.96	0.2418	0.0069	0.0287	10.3420
3.98	0.2399	0.0068	0.0282	10.5289
4.00	0.2381	0.0066	0.0277	10.7188
4.02	0.2363	0.0064	0.0271	10.9117
4.04	0.2345	0.0062	0.0266	11.1077
4.06	0.2327	0.0061	0.0261	11.3068
4.08	0.2310	0.0059	0.0256	11.5091
4.10	0.2293	0.0058	0.0252	11.7147
4.12	0.2275	0.0056	0.0247	11.9234
4.14	0.2258	0.0055	0.0242	12.1354

TABLE B.1 *(Continued)*

M	T/T_o	p/p_o	ρ/ρ_o	A/A^*
4.16	0.2242	0.0053	0.0238	12.3508
4.18	0.2225	0.0052	0.0234	12.5695
4.20	0.2208	0.0051	0.0229	12.7916
4.22	0.2192	0.0049	0.0225	13.0172
4.24	0.2176	0.0048	0.0221	13.2463
4.26	0.2160	0.0047	0.0217	13.4789
4.28	0.2144	0.0046	0.0213	13.7151
4.30	0.2129	0.0044	0.0209	13.9549
4.32	0.2113	0.0043	0.0205	14.1984
4.34	0.2098	0.0042	0.0202	14.4456
4.36	0.2083	0.0041	0.0198	14.6965
4.38	0.2067	0.0040	0.0194	14.9513
4.40	0.2053	0.0039	0.0191	15.2099
4.42	0.2038	0.0038	0.0187	15.4724
4.44	0.2023	0.0037	0.0184	15.7388
4.46	0.2009	0.0036	0.0181	16.0092
4.48	0.1994	0.0035	0.0178	16.2837
4.50	0.1980	0.0035	0.0174	16.5622
4.52	0.1966	0.0034	0.0171	16.8449
4.54	0.1952	0.0033	0.0168	17.1317
4.56	0.1938	0.0032	0.0165	17.4228
4.58	0.1925	0.0031	0.0163	17.7181
4.60	0.1911	0.0031	0.0160	18.0178
4.62	0.1898	0.0030	0.0157	18.3218
4.64	0.1885	0.0029	0.0154	18.6303
4.66	0.1872	0.0028	0.0152	18.9433
4.68	0.1859	0.0028	0.0149	19.2608
4.70	0.1846	0.0027	0.0146	19.5828
4.72	0.1833	0.0026	0.0144	19.9095
4.74	0.1820	0.0026	0.0141	20.2409
4.76	0.1808	0.0025	0.0139	20.5770
4.78	0.1795	0.0025	0.0137	20.9179
4.80	0.1783	0.0024	0.0134	21.2637
4.82	0.1771	0.0023	0.0132	21.6144
4.84	0.1759	0.0023	0.0130	21.9700
4.86	0.1747	0.0022	0.0128	22.3306
4.88	0.1735	0.0022	0.0125	22.6963
4.90	0.1724	0.0021	0.0123	23.0671
4.92	0.1712	0.0021	0.0121	23.4431
4.94	0.1700	0.0020	0.0119	23.8243
4.96	0.1689	0.0020	0.0117	24.2109
4.98	0.1678	0.0019	0.0115	24.6027
5.00	0.1667	0.0019	0.0113	25.0000
6.00	0.1220	0.0006	0.0052	53.1798
7.00	0.0926	0.0002	0.0026	104.1429
8.00	0.0725	0.0001	0.0014	190.1094
9.00	0.0581	0.0000	0.0008	327.1893
10.00	0.0476	0.0000	0.0005	535.937

TABLE B.2 Isentropic Flow Table ($\gamma = 1.3$)

M	T/T_o	p/p_o	ρ/ρ_o	A/A^*
0.00	1.0000	1.0000	1.0000	∞
0.05	0.9996	0.9984	0.9988	11.7214
0.10	0.9985	0.9935	0.9950	5.8860
0.15	0.9966	0.9855	0.9888	3.9522
0.20	0.9940	0.9744	0.9803	2.9940
0.25	0.9907	0.9604	0.9694	2.4262
0.30	0.9867	0.9435	0.9563	2.0537
0.35	0.9820	0.9241	0.9411	1.7930
0.40	0.9766	0.9023	0.9240	1.6023
0.45	0.9705	0.8784	0.9051	1.4586
0.50	0.9639	0.8525	0.8845	1.3479
0.55	0.9566	0.8251	0.8625	1.2614
0.60	0.9488	0.7962	0.8392	1.1932
0.65	0.9404	0.7662	0.8148	1.1395
0.70	0.9315	0.7354	0.7895	1.0972
0.75	0.9222	0.7040	0.7634	1.0644
0.80	0.9124	0.6722	0.7367	1.0395
0.85	0.9022	0.6403	0.7097	1.0214
0.90	0.8917	0.6084	0.6823	1.0092
0.95	0.8808	0.5769	0.6549	1.0022
1.00	0.8696	0.5457	0.6276	1.0000
1.05	0.8581	0.5152	0.6004	1.0021
1.10	0.8464	0.4854	0.5735	1.0083
1.15	0.8345	0.4565	0.5470	1.0184
1.20	0.8224	0.4285	0.5211	1.0321
1.25	0.8101	0.4015	0.4957	1.0495
1.30	0.7978	0.3757	0.4709	1.0703
1.35	0.7853	0.3509	0.4468	1.0948
1.40	0.7728	0.3273	0.4235	1.1227
1.45	0.7602	0.3049	0.4010	1.1543
1.50	0.7477	0.2836	0.3793	1.1895
1.55	0.7351	0.2635	0.3585	1.2284
1.60	0.7225	0.2446	0.3385	1.2712
1.65	0.7100	0.2268	0.3194	1.3180
1.70	0.6976	0.2100	0.3011	1.3690
1.75	0.6852	0.1944	0.2836	1.4243
1.80	0.6729	0.1797	0.2671	1.4841
1.85	0.6608	0.1660	0.2513	1.5486
1.90	0.6487	0.1533	0.2363	1.6182
1.95	0.6368	0.1415	0.2222	1.6929
2.00	0.6250	0.1305	0.2087	1.7732
2.05	0.6134	0.1203	0.1961	1.8593
2.10	0.6019	0.1108	0.1841	1.9514
2.15	0.5905	0.1020	0.1728	2.0501
2.20	0.5794	0.0939	0.1621	2.1556
2.25	0.5684	0.0865	0.1521	2.2682
2.30	0.5576	0.0795	0.1427	2.3885
2.35	0.5469	0.0732	0.1338	2.5168

TABLE B.2 *(Continued)*

M	T/T_o	p/p_o	ρ/ρ_o	A/A^*
2.40	0.5365	0.0673	0.1255	2.6535
2.45	0.5262	0.0619	0.1176	2.7993
2.50	0.5161	0.0569	0.1103	2.9545
2.55	0.5062	0.0523	0.1034	3.1197
2.60	0.4965	0.0481	0.0969	3.2954
2.65	0.4870	0.0443	0.0909	3.4824
2.70	0.4777	0.0407	0.0852	3.6811
2.75	0.4685	0.0374	0.0799	3.8922
2.80	0.4596	0.0344	0.0749	4.1165
2.85	0.4508	0.0317	0.0702	4.3546
2.90	0.4422	0.0291	0.0659	4.6073
2.95	0.4338	0.0268	0.0618	4.8754
3.00	0.4255	0.0247	0.0580	5.1598
3.50	0.3524	0.0109	0.0309	9.1098
4.00	0.2941	0.0050	0.0169	15.9441
4.50	0.2477	0.0024	0.0095	27.3870
5.00	0.2105	0.0012	0.0056	45.9565
6.00	0.1563	0.0003	0.0021	120.0965
7.00	0.1198	0.0001	0.0008	285.3372
8.00	0.0943	0.0000	0.0004	623.1235
9.00	0.0760	0.0000	0.0002	1265.6040
10.00	0.0625	0.0000	0.0001	2416.1184

TABLE B.3 Isentropic Flow Table ($\gamma = 5/3$)

M	T/T_o	p/p_o	ρ/ρ_o	A/A^*
0.00	1.0000	1.0000	1.0000	∞
0.05	0.9992	0.9979	0.9988	11.2688
0.10	0.9967	0.9917	0.9950	5.6626
0.15	0.9926	0.9815	0.9889	3.8065
0.20	0.9868	0.9674	0.9803	2.8880
0.25	0.9796	0.9498	0.9695	2.3447
0.30	0.9709	0.9288	0.9566	1.9892
0.35	0.9608	0.9048	0.9417	1.7411
0.40	0.9494	0.8782	0.9250	1.5603
0.45	0.9368	0.8493	0.9067	1.4244
0.50	0.9231	0.8186	0.8869	1.3203
0.55	0.9084	0.7865	0.8658	1.2394
0.60	0.8929	0.7533	0.8437	1.1760
0.65	0.8766	0.7194	0.8207	1.1263
0.70	0.8596	0.6851	0.7970	1.0875
0.75	0.8421	0.6508	0.7728	1.0576
0.80	0.8242	0.6167	0.7482	1.0351
0.85	0.8059	0.5831	0.7235	1.0189
0.90	0.7874	0.5502	0.6987	1.0081
0.95	0.7687	0.5181	0.6740	1.0019
1.00	0.7500	0.4871	0.6495	1.0000
1.05	0.7313	0.4573	0.6253	1.0018
1.10	0.7126	0.4286	0.6015	1.0071
1.15	0.6940	0.4013	0.5782	1.0154
1.20	0.6757	0.3753	0.5554	1.0268
1.25	0.6575	0.3506	0.5332	1.0408
1.30	0.6397	0.3272	0.5116	1.0575
1.35	0.6221	0.3052	0.4907	1.0767
1.40	0.6048	0.2845	0.4704	1.0983
1.45	0.5879	0.2651	0.4508	1.1222
1.50	0.5714	0.2468	0.4320	1.1484
1.55	0.5553	0.2298	0.4138	1.1769
1.60	0.5396	0.2139	0.3963	1.2076
1.65	0.5242	0.1990	0.3796	1.2404
1.70	0.5093	0.1851	0.3635	1.2754
1.75	0.4948	0.1723	0.3481	1.3126
1.80	0.4808	0.1603	0.3334	1.3520
1.85	0.4671	0.1491	0.3192	1.3935
1.90	0.4539	0.1388	0.3058	1.4372
1.95	0.4410	0.1292	0.2929	1.4831
2.00	0.4286	0.1202	0.2806	1.5313
2.05	0.4165	0.1120	0.2688	1.5816
2.10	0.4049	0.1043	0.2576	1.6342
2.15	0.3936	0.0972	0.2469	1.6890
2.20	0.3827	0.0906	0.2367	1.7462
2.25	0.3721	0.0845	0.2270	1.8057
2.30	0.3619	0.0788	0.2177	1.8675
2.35	0.3520	0.0735	0.2088	1.9317
2.40	0.3425	0.0686	0.2004	1.9984
2.45	0.3332	0.0641	0.1924	2.0675
2.50	0.3243	0.0599	0.1847	2.1391
2.55	0.3157	0.0560	0.1774	2.2132
2.60	0.3074	0.0524	0.1704	2.2898
2.65	0.2993	0.0490	0.1638	2.3691
2.70	0.2915	0.0459	0.1574	2.4510
2.75	0.2840	0.0430	0.1514	2.5356
2.80	0.2768	0.0403	0.1456	2.6229
2.85	0.2697	0.0378	0.1401	2.7129
2.90	0.2629	0.0354	0.1348	2.8058
2.95	0.2564	0.0333	0.1298	2.9015
3.00	0.2500	0.0313	0.1250	3.0000
3.50	0.1967	0.0172	0.0873	4.1529
4.00	0.1579	0.0099	0.0627	5.6406
4.50	0.1290	0.0060	0.0463	7.5078
5.00	0.1071	0.0038	0.0351	9.8000
6.00	0.0769	0.0016	0.0213	15.8438
7.00	0.0577	0.0008	0.0139	24.1429
8.00	0.0448	0.0004	0.0095	35.0703
9.00	0.0357	0.0002	0.0067	49.0000
10.00	0.0291	0.0001	0.0050	66.3062

Appendix C

Normal-Shock Tables

TABLE C.1 Normal-Shock Table ($\gamma = 1.4$)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	p_{o2}/p_{o1}	p_{o2}/p_1
1.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.8929
1.02	0.9805	1.0471	1.0132	1.0334	1.0000	1.9379
1.04	0.9620	1.0952	1.0263	1.0671	0.9999	1.9844
1.06	0.9444	1.1442	1.0393	1.1009	0.9998	2.0325
1.08	0.9277	1.1941	1.0522	1.1349	0.9994	2.0819
1.10	0.9118	1.2450	1.0649	1.1691	0.9989	2.1328
1.12	0.8966	1.2968	1.0776	1.2034	0.9982	2.1851
1.14	0.8820	1.3495	1.0903	1.2378	0.9973	2.2388
1.16	0.8682	1.4032	1.1029	1.2723	0.9961	2.2937
1.18	0.8549	1.4578	1.1154	1.3069	0.9946	2.3500
1.20	0.8422	1.5133	1.1280	1.3416	0.9928	2.4075
1.22	0.8300	1.5698	1.1405	1.3764	0.9907	2.4663
1.24	0.8183	1.6272	1.1531	1.4112	0.9884	2.5263
1.26	0.8071	1.6855	1.1657	1.4460	0.9857	2.5875
1.28	0.7963	1.7448	1.1783	1.4808	0.9827	2.6500
1.30	0.7860	1.8050	1.1909	1.5157	0.9794	2.7136
1.32	0.7760	1.8661	1.2035	1.5505	0.9758	2.7784
1.34	0.7664	1.9282	1.2162	1.5854	0.9718	2.8444
1.36	0.7572	1.9912	1.2290	1.6202	0.9676	2.9115
1.38	0.7483	2.0551	1.2418	1.6549	0.9630	2.9798
1.40	0.7397	2.1200	1.2547	1.6897	0.9582	3.0492
1.42	0.7314	2.1858	1.2676	1.7243	0.9531	3.1198
1.44	0.7235	2.2525	1.2807	1.7589	0.9476	3.1915
1.46	0.7157	2.3202	1.2938	1.7934	0.9420	3.2643
1.48	0.7083	2.3888	1.3069	1.8278	0.9360	3.3382
1.50	0.7011	2.4583	1.3202	1.8621	0.9298	3.4133
1.52	0.6941	2.5288	1.3336	1.8963	0.9233	3.4894
1.54	0.6874	2.6002	1.3470	1.9303	0.9166	3.5667
1.56	0.6809	2.6725	1.3606	1.9643	0.9097	3.6450
1.58	0.6746	2.7458	1.3742	1.9981	0.9026	3.7244
1.60	0.6684	2.8200	1.3880	2.0317	0.8952	3.8050
1.62	0.6625	2.8951	1.4018	2.0653	0.8877	3.8866
1.64	0.6568	2.9712	1.4158	2.0986	0.8799	3.9693
1.66	0.6512	3.0482	1.4299	2.1318	0.8720	4.0531
1.68	0.6458	3.1261	1.4440	2.1649	0.8639	4.1379
1.70	0.6405	3.2050	1.4583	2.1977	0.8557	4.2238
1.72	0.6355	3.2848	1.4727	2.2304	0.8474	4.3108
1.74	0.6305	3.3655	1.4873	2.2629	0.8389	4.3989
1.76	0.6257	3.4472	1.5019	2.2952	0.8302	4.4880
1.78	0.6210	3.5298	1.5167	2.3273	0.8215	4.5782
1.80	0.6165	3.6133	1.5316	2.3592	0.8127	4.6695
1.82	0.6121	3.6978	1.5466	2.3909	0.8038	4.7618
1.84	0.6078	3.7832	1.5617	2.4224	0.7948	4.8552
1.86	0.6036	3.8695	1.5770	2.4537	0.7857	4.9497
1.88	0.5996	3.9568	1.5924	2.4848	0.7765	5.0452
1.90	0.5956	4.0450	1.6079	2.5157	0.7674	5.1418

TABLE C.1 *(Continued)*

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	p_{o2}/p_{o1}	p_{o2}/p_1
1.92	0.5918	4.1341	1.6236	2.5463	0.7581	5.2394
1.94	0.5880	4.2242	1.6394	2.5767	0.7488	5.3381
1.96	0.5844	4.3152	1.6553	2.6069	0.7395	5.4378
1.98	0.5808	4.4071	1.6713	2.6369	0.7302	5.5386
2.00	0.5774	4.5000	1.6875	2.6667	0.7209	5.6404
2.02	0.5740	4.5938	1.7038	2.6962	0.7115	5.7433
2.04	0.5707	4.6885	1.7203	2.7255	0.7022	5.8473
2.06	0.5675	4.7842	1.7369	2.7545	0.6928	5.9523
2.08	0.5643	4.8808	1.7536	2.7833	0.6835	6.0583
2.10	0.5613	4.9783	1.7705	2.8119	0.6742	6.1654
2.12	0.5583	5.0768	1.7875	2.8402	0.6649	6.2735
2.14	0.5554	5.1762	1.8046	2.8683	0.6557	6.3827
2.16	0.5525	5.2765	1.8219	2.8962	0.6464	6.4929
2.18	0.5498	5.3778	1.8393	2.9238	0.6373	6.6042
2.20	0.5471	5.4800	1.8569	2.9512	0.6281	6.7165
2.22	0.5444	5.5831	1.8746	2.9784	0.6191	6.8298
2.24	0.5418	5.6872	1.8924	3.0053	0.6100	6.9442
2.26	0.5393	5.7922	1.9104	3.0319	0.6011	7.0597
2.28	0.5368	5.8981	1.9285	3.0584	0.5921	7.1762
2.30	0.5344	6.0050	1.9468	3.0845	0.5833	7.2937
2.32	0.5321	6.1128	1.9652	3.1105	0.5745	7.4122
2.34	0.5297	6.2215	1.9838	3.1362	0.5658	7.5319
2.36	0.5275	6.3312	2.0025	3.1617	0.5572	7.6525
2.38	0.5253	6.4418	2.0213	3.1869	0.5486	7.7742
2.40	0.5231	6.5533	2.0403	3.2119	0.5401	7.8969
2.42	0.5210	6.6658	2.0595	3.2367	0.5317	8.0207
2.44	0.5189	6.7792	2.0788	3.2612	0.5234	8.1455
2.46	0.5169	6.8935	2.0982	3.2855	0.5152	8.2713
2.48	0.5149	7.0088	2.1178	3.3095	0.5071	8.3982
2.50	0.5130	7.1250	2.1375	3.3333	0.4990	8.5261
2.52	0.5111	7.2421	2.1574	3.3569	0.4911	8.6551
2.54	0.5092	7.3602	2.1774	3.3803	0.4832	8.7851
2.56	0.5074	7.4792	2.1976	3.4034	0.4754	8.9161
2.58	0.5056	7.5991	2.2179	3.4263	0.4677	9.0482
2.60	0.5039	7.7200	2.2383	3.4490	0.4601	9.1813
2.62	0.5022	7.8418	2.2590	3.4714	0.4526	9.3155
2.64	0.5005	7.9645	2.2797	3.4937	0.4452	9.4506
2.66	0.4988	8.0882	2.3006	3.5157	0.4379	9.5869
2.68	0.4972	8.2128	2.3217	3.5374	0.4307	9.7241
2.70	0.4956	8.3383	2.3429	3.5590	0.4236	9.8624
2.72	0.4941	8.4648	2.3642	3.5803	0.4166	10.0017
2.74	0.4926	8.5922	2.3858	3.6015	0.4097	10.1421
2.76	0.4911	8.7205	2.4074	3.6224	0.4028	10.2835
2.78	0.4896	8.8498	2.4292	3.6431	0.3961	10.4259
2.80	0.4882	8.9800	2.4512	3.6636	0.3895	10.5694
2.82	0.4868	9.1111	2.4733	3.6838	0.3829	10.7139
2.84	0.4854	9.2432	2.4955	3.7039	0.3765	10.8594
2.86	0.4840	9.3762	2.5179	3.7238	0.3701	11.0060
2.88	0.4827	9.5101	2.5405	3.7434	0.3639	11.1536
2.90	0.4814	9.6450	2.5632	3.7629	0.3577	11.3022
2.92	0.4801	9.7808	2.5861	3.7821	0.3517	11.4519
2.94	0.4788	9.9175	2.6091	3.8012	0.3457	11.6026
2.96	0.4776	10.0552	2.6322	3.8200	0.3398	11.7544
2.98	0.4764	10.1938	2.6555	3.8387	0.3340	11.9072
3.00	0.4752	10.3333	2.6790	3.8571	0.3283	12.0610
3.02	0.4740	10.4738	2.7026	3.8754	0.3227	12.2158
3.04	0.4729	10.6152	2.7264	3.8935	0.3172	12.3717

TABLE C.1 *(Continued)*

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	p_{o2}/p_{o1}	p_{o2}/p_1
3.06	0.4717	10.7575	2.7503	3.9114	0.3118	12.5286
3.08	0.4706	10.9008	2.7744	3.9291	0.3065	12.6865
3.10	0.4695	11.0450	2.7986	3.9466	0.3012	12.8455
3.12	0.4685	11.1901	2.8230	3.9639	0.2960	13.0055
3.14	0.4674	11.3362	2.8475	3.9811	0.2910	13.1666
3.16	0.4664	11.4832	2.8722	3.9981	0.2860	13.3287
3.18	0.4654	11.6311	2.8970	4.0149	0.2811	13.4918
3.20	0.4643	11.7800	2.9220	4.0315	0.2762	13.6559
3.22	0.4634	11.9298	2.9471	4.0479	0.2715	13.8211
3.24	0.4624	12.0805	2.9724	4.0642	0.2668	13.9873
3.26	0.4614	12.2322	2.9979	4.0803	0.2622	14.1546
3.28	0.4605	12.3848	3.0234	4.0963	0.2577	14.3228
3.30	0.4596	12.5383	3.0492	4.1120	0.2533	14.4921
3.32	0.4587	12.6928	3.0751	4.1276	0.2489	14.6625
3.34	0.4578	12.8482	3.1011	4.1431	0.2446	14.8339
3.36	0.4569	13.0045	3.1273	4.1583	0.2404	15.0063
3.38	0.4560	13.1618	3.1537	4.1734	0.2363	15.1797
3.40	0.4552	13.3200	3.1802	4.1884	0.2322	15.3542
3.42	0.4544	13.4791	3.2069	4.2032	0.2282	15.5297
3.44	0.4535	13.6392	3.2337	4.2179	0.2243	15.7062
3.46	0.4527	13.8002	3.2607	4.2323	0.2205	15.8838
3.48	0.4519	13.9621	3.2878	4.2467	0.2167	16.0624
3.50	0.4512	14.1250	3.3151	4.2609	0.2129	16.2420
3.52	0.4504	14.2888	3.3425	4.2749	0.2093	16.4227
3.54	0.4496	14.4535	3.3701	4.2888	0.2057	16.6044
3.56	0.4489	14.6192	3.3978	4.3026	0.2022	16.7871
3.58	0.4481	14.7858	3.4257	4.3162	0.1987	16.9708
3.60	0.4474	14.9533	3.4537	4.3296	0.1953	17.1556
3.62	0.4467	15.1218	3.4819	4.3429	0.1920	17.3415
3.64	0.4460	15.2912	3.5103	4.3561	0.1887	17.5283
3.66	0.4453	15.4615	3.5388	4.3692	0.1855	17.7162
3.68	0.4446	15.6328	3.5674	4.3821	0.1823	17.9051
3.70	0.4439	15.8050	3.5962	4.3949	0.1792	18.0951
3.72	0.4433	15.9781	3.6252	4.4075	0.1761	18.2860
3.74	0.4426	16.1522	3.6543	4.4200	0.1731	18.4781
3.76	0.4420	16.3272	3.6836	4.4324	0.1702	18.6711
3.78	0.4414	16.5031	3.7130	4.4447	0.1673	18.8652
3.80	0.4407	16.6800	3.7426	4.4568	0.1645	19.0603
3.82	0.4401	16.8578	3.7723	4.4688	0.1617	19.2564
3.84	0.4395	17.0365	3.8022	4.4807	0.1589	19.4536
3.86	0.4389	17.2162	3.8323	4.4924	0.1563	19.6518
3.88	0.4383	17.3968	3.8625	4.5041	0.1536	19.8510
3.90	0.4377	17.5783	3.8928	4.5156	0.1510	20.0513
3.92	0.4372	17.7608	3.9233	4.5270	0.1485	20.2526
3.94	0.4366	17.9442	3.9540	4.5383	0.1460	20.4549
3.96	0.4360	18.1285	3.9848	4.5494	0.1435	20.6583
3.98	0.4355	18.3138	4.0158	4.5605	0.1411	20.8627
4.00	0.4350	18.5000	4.0469	4.5714	0.1388	21.0681
4.02	0.4344	18.6871	4.0782	4.5823	0.1364	21.2745
4.04	0.4339	18.8752	4.1096	4.5930	0.1342	21.4820
4.06	0.4334	19.0642	4.1412	4.6036	0.1319	21.6905
4.08	0.4329	19.2541	4.1729	4.6141	0.1297	21.9001
4.10	0.4324	19.4450	4.2048	4.6245	0.1276	22.1106
4.12	0.4319	19.6368	4.2368	4.6348	0.1254	22.3223
4.14	0.4314	19.8295	4.2690	4.6450	0.1234	22.5349
4.16	0.4309	20.0232	4.3014	4.6550	0.1213	22.7486
4.18	0.4304	20.2178	4.3339	4.6650	0.1193	22.9633

TABLE C.1 *(Continued)*

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	p_{o2}/p_{o1}	p_{o2}/p_1
4.20	0.4299	20.4133	4.3666	4.6749	0.1173	23.1790
4.22	0.4295	20.6098	4.3994	4.6847	0.1154	23.3958
4.24	0.4290	20.8072	4.4324	4.6944	0.1135	23.6135
4.26	0.4286	21.0055	4.4655	4.7040	0.1116	23.8324
4.28	0.4281	21.2048	4.4988	4.7135	0.1098	24.0522
4.30	0.4277	21.4050	4.5322	4.7229	0.1080	24.2731
4.32	0.4272	21.6061	4.5658	4.7322	0.1062	24.4950
4.34	0.4268	21.8082	4.5995	4.7414	0.1045	24.7180
4.36	0.4264	22.0112	4.6334	4.7505	0.1028	24.9420
4.38	0.4260	22.2151	4.6675	4.7595	0.1011	25.1670
4.40	0.4255	22.4200	4.7017	4.7685	0.0995	25.3930
4.42	0.4251	22.6258	4.7361	4.7773	0.0979	25.6201
4.44	0.4247	22.8325	4.7706	4.7861	0.0963	25.8482
4.46	0.4243	23.0402	4.8053	4.7948	0.0947	26.0773
4.48	0.4239	23.2488	4.8401	4.8034	0.0932	26.3075
4.50	0.4236	23.4583	4.8751	4.8119	0.0917	26.5387
4.52	0.4232	23.6688	4.9102	4.8203	0.0902	26.7709
4.54	0.4228	23.8802	4.9455	4.8287	0.0888	27.0041
4.56	0.4224	24.0925	4.9810	4.8369	0.0874	27.2384
4.58	0.4220	24.3058	5.0166	4.8451	0.0860	27.4737
4.60	0.4217	24.5200	5.0523	4.8532	0.0846	27.7101
4.62	0.4213	24.7351	5.0882	4.8612	0.0832	27.9475
4.64	0.4210	24.9512	5.1243	4.8692	0.0819	28.1859
4.66	0.4206	25.1682	5.1605	4.8771	0.0806	28.4253
4.68	0.4203	25.3861	5.1969	4.8849	0.0793	28.6658
4.70	0.4199	25.6050	5.2334	4.8926	0.0781	28.9073
4.72	0.4196	25.8248	5.2701	4.9002	0.0769	29.1498
4.74	0.4192	26.0455	5.3070	4.9078	0.0756	29.3934
4.76	0.4189	26.2672	5.3440	4.9153	0.0745	29.6380
4.78	0.4186	26.4898	5.3811	4.9227	0.0733	29.8836
4.80	0.4183	26.7133	5.4184	4.9301	0.0721	30.1303
4.82	0.4179	26.9378	5.4559	4.9374	0.0710	30.3779
4.84	0.4176	27.1632	5.4935	4.9446	0.0699	30.6267
4.86	0.4173	27.3895	5.5313	4.9518	0.0688	30.8764
4.88	0.4170	27.6168	5.5692	4.9589	0.0677	31.1272
4.90	0.4167	27.8450	5.6073	4.9659	0.0667	31.3790
4.92	0.4164	28.0741	5.6455	4.9728	0.0657	31.6318
4.94	0.4161	28.3042	5.6839	4.9797	0.0647	31.8857
4.96	0.4158	28.5352	5.7224	4.9865	0.0637	32.1406
4.98	0.4155	28.7671	5.7611	4.9933	0.0627	32.3965
5.00	0.4152	29.0000	5.8000	5.0000	0.0617	32.6535
6.00	0.4042	41.8333	7.9406	5.2683	0.0297	46.8152
7.00	0.3974	57.0000	10.4694	5.4444	0.0154	63.5526
8.00	0.3929	74.5000	13.3867	5.5652	0.0085	82.8655
9.00	0.3898	94.3333	16.6927	5.6512	0.0050	104.7536
10.00	0.3876	116.5000	20.3875	5.7143	0.0030	129.2170

TABLE C.2 Normal-Shock Table ($\gamma = 1.3$)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	p_{o2}/p_{o1}	p_{o2}/p_1
1.00	1.00000	1.00000	1.00000	1.00000	1.00000	1.83242
1.05	0.95297	1.11587	1.02566	1.08795	0.99985	1.94068
1.10	0.91120	1.23739	1.05065	1.17774	0.99891	2.05780
1.15	0.87388	1.36457	1.07521	1.26911	0.99660	2.18319
1.20	0.84033	1.49739	1.09953	1.36184	0.99258	2.31638
1.25	0.81003	1.63587	1.12377	1.45570	0.98661	2.45706
1.30	0.78253	1.78000	1.14805	1.55046	0.97858	2.60495
1.35	0.75749	1.92978	1.17246	1.64592	0.96845	2.75987
1.40	0.73459	2.08522	1.19710	1.74189	0.95627	2.92166
1.45	0.71358	2.24630	1.22204	1.83816	0.94211	3.09019
1.50	0.69425	2.41304	1.24732	1.93458	0.92610	3.26536
1.55	0.67642	2.58543	1.27301	2.03097	0.90838	3.44710
1.60	0.65992	2.76348	1.29914	2.12717	0.88911	3.63533
1.65	0.64463	2.94717	1.32574	2.22304	0.86847	3.83000
1.70	0.63041	3.13652	1.35285	2.31845	0.84664	4.03107
1.75	0.61718	3.33152	1.38050	2.41328	0.82380	4.23849
1.80	0.60484	3.53217	1.40870	2.50740	0.80014	4.45224
1.85	0.59330	3.73848	1.43747	2.60073	0.77582	4.67229
1.90	0.58251	3.95043	1.46684	2.69316	0.75102	4.89860
1.95	0.57238	4.16804	1.49682	2.78461	0.72589	5.13117
2.00	0.56288	4.39130	1.52741	2.87500	0.70057	5.36997
2.05	0.55394	4.62022	1.55863	2.96427	0.67521	5.61500
2.10	0.54553	4.85478	1.59050	3.05236	0.64992	5.86622
2.15	0.53760	5.09500	1.62302	3.13922	0.62481	6.12364
2.20	0.53011	5.34087	1.65619	3.22480	0.59998	6.38725
2.25	0.52304	5.59239	1.69002	3.30906	0.57552	6.65703
2.30	0.51635	5.84957	1.72453	3.39197	0.55150	6.93298
2.35	0.51001	6.11239	1.75972	3.47351	0.52799	7.21509
2.40	0.50400	6.38087	1.79558	3.55365	0.50504	7.50335
2.45	0.49831	6.65500	1.83213	3.63238	0.48269	7.79776
2.50	0.49290	6.93478	1.86938	3.70968	0.46098	8.09831
2.55	0.48775	7.22022	1.90731	3.78555	0.43994	8.40500
2.60	0.48286	7.51130	1.94594	3.85998	0.41958	8.71783
2.65	0.47820	7.80804	1.98528	3.93298	0.39993	9.03679
2.70	0.47377	8.11043	2.02531	4.00454	0.38099	9.36187
2.75	0.46954	8.41848	2.06605	4.07467	0.36276	9.69308
2.80	0.46550	8.73217	2.10750	4.14338	0.34525	10.03042
2.85	0.46164	9.05152	2.14966	4.21068	0.32844	10.37387
2.90	0.45796	9.37652	2.19252	4.27659	0.31233	10.72344
2.95	0.45444	9.70717	2.23611	4.34111	0.29691	11.07912
3.00	0.45107	10.04348	2.28040	4.40426	0.28216	11.44092
3.50	0.42411	13.71739	2.76295	4.96476	0.16775	15.39484
4.00	0.40577	17.95652	3.31805	5.41176	0.09933	19.95890
4.50	0.39275	22.76087	3.94619	5.76780	0.05939	25.13253
5.00	0.38319	28.13043	4.64764	6.05263	0.03613	30.91547
6.00	0.37039	40.56522	6.27095	6.46875	0.01422	44.30868
7.00	0.36248	55.26087	8.18861	6.74850	0.00610	60.13786
8.00	0.35726	72.21739	10.40087	6.94340	0.00283	78.40273
9.00	0.35364	91.43478	12.90786	7.08365	0.00140	99.10318
10.00	0.35103	112.91304	15.70964	7.18750	0.00074	122.23913

TABLE C.3 Normal-Shock Table ($\gamma = 5/3$)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	p_{o2}/p_{o1}	p_{o2}/p_1
1.00	1.00000	1.00000	1.00000	1.00000	1.00000	2.05280
1.05	0.95349	1.12813	1.04946	1.07495	0.99986	2.18654
1.10	0.91305	1.26250	1.09817	1.14964	0.99899	2.33058
1.15	0.87759	1.40313	1.14650	1.22383	0.99691	2.48423
1.20	0.84624	1.55000	1.19479	1.29730	0.99335	2.64701
1.25	0.81837	1.70313	1.24328	1.36986	0.98815	2.81856
1.30	0.79343	1.86250	1.29218	1.44136	0.98127	2.99860
1.35	0.77101	2.02813	1.34165	1.51166	0.97274	3.18694
1.40	0.75076	2.20000	1.39184	1.58065	0.96261	3.38340
1.45	0.73239	2.37813	1.44285	1.64821	0.95100	3.58785
1.50	0.71568	2.56250	1.49479	1.71429	0.93802	3.80021
1.55	0.70041	2.75313	1.54774	1.77881	0.92381	4.02037
1.60	0.68643	2.95000	1.60176	1.84173	0.90851	4.24829
1.65	0.67358	3.15313	1.65691	1.90301	0.89226	4.48389
1.70	0.66175	3.36250	1.71325	1.96265	0.87521	4.72714
1.75	0.65083	3.57813	1.77081	2.02062	0.85749	4.97799
1.80	0.64072	3.80000	1.82963	2.07692	0.83922	5.23641
1.85	0.63135	4.02813	1.88975	2.13157	0.82053	5.50239
1.90	0.62264	4.26250	1.95119	2.18457	0.80153	5.77588
1.95	0.61454	4.50313	2.01397	2.23594	0.78231	6.05688
2.00	0.60698	4.75000	2.07813	2.28571	0.76298	6.34536
2.05	0.59992	5.00313	2.14366	2.33391	0.74362	6.64132
2.10	0.59331	5.26250	2.21061	2.38057	0.72429	6.94473
2.15	0.58712	5.52813	2.27897	2.42571	0.70507	7.25558
2.20	0.58132	5.80000	2.34876	2.46939	0.68601	7.57388
2.25	0.57586	6.07813	2.41999	2.51163	0.66717	7.89960
2.30	0.57073	6.36250	2.49268	2.55247	0.64858	8.23274
2.35	0.56590	6.65313	2.56683	2.59196	0.63028	8.57329
2.40	0.56134	6.95000	2.64245	2.63014	0.61231	8.92125
2.45	0.55704	7.25313	2.71954	2.66704	0.59468	9.27661
2.50	0.55298	7.56250	2.79813	2.70270	0.57743	9.63937
2.55	0.54913	7.87812	2.87820	2.73717	0.56056	10.00952
2.60	0.54549	8.20000	2.95976	2.77049	0.54409	10.38706
2.65	0.54204	8.52812	3.04283	2.80269	0.52803	10.77199
2.70	0.53877	8.86250	3.12740	2.83382	0.51238	11.16429
2.75	0.53566	9.20312	3.21349	2.86391	0.49716	11.56398
2.80	0.53270	9.55000	3.30108	2.89299	0.48235	11.97104
2.85	0.52989	9.90312	3.39020	2.92111	0.46796	12.38548
2.90	0.52721	10.26250	3.48083	2.94829	0.45399	12.80729
2.95	0.52466	10.62813	3.57299	2.97458	0.44043	13.23646
3.00	0.52223	11.00000	3.66667	3.00000	0.42728	13.67301
3.50	0.50310	15.06250	4.68782	3.21311	0.31657	18.44342
4.00	0.49041	19.75000	5.86328	3.36842	0.23725	23.94948
4.50	0.48158	25.06250	7.19387	3.48387	0.18056	30.19068
5.00	0.47519	31.00000	8.68000	3.57143	0.13966	37.16673
6.00	0.46677	44.75000	12.11979	3.69231	0.08751	53.32287
7.00	0.46164	61.00000	16.18367	3.76923	0.05789	72.41729
8.00	0.45829	79.75000	20.87207	3.82090	0.04007	94.44973
9.00	0.45598	101.00000	26.18519	3.85714	0.02879	119.42007
10.00	0.45433	124.75000	32.12313	3.88350	0.02133	147.32824

Appendix D

Oblique-Shock Charts

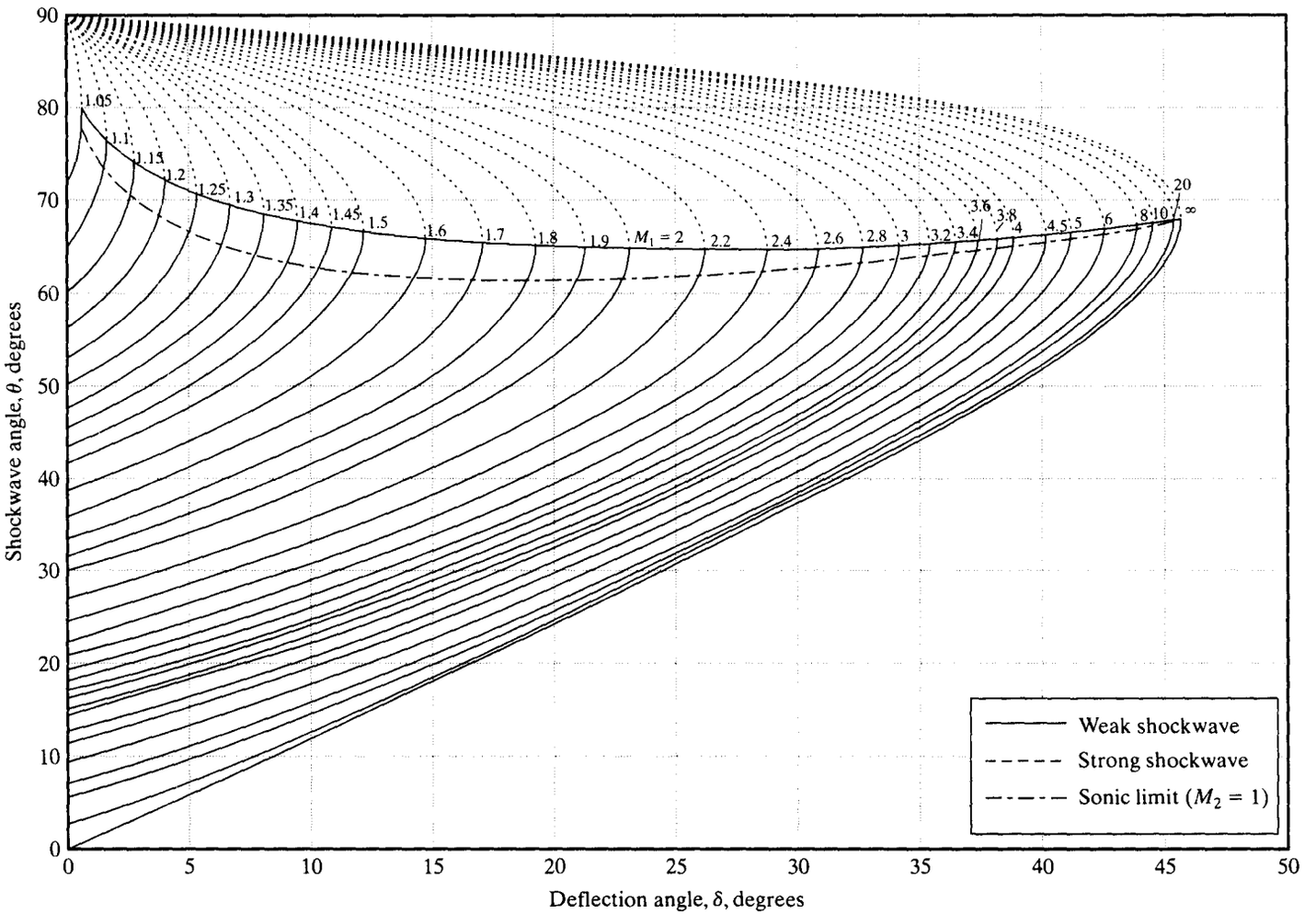

Figure D.1 Variation of shockwave angle with flow-deflection angle for various upstream Mach numbers ($\gamma = 1.4$)

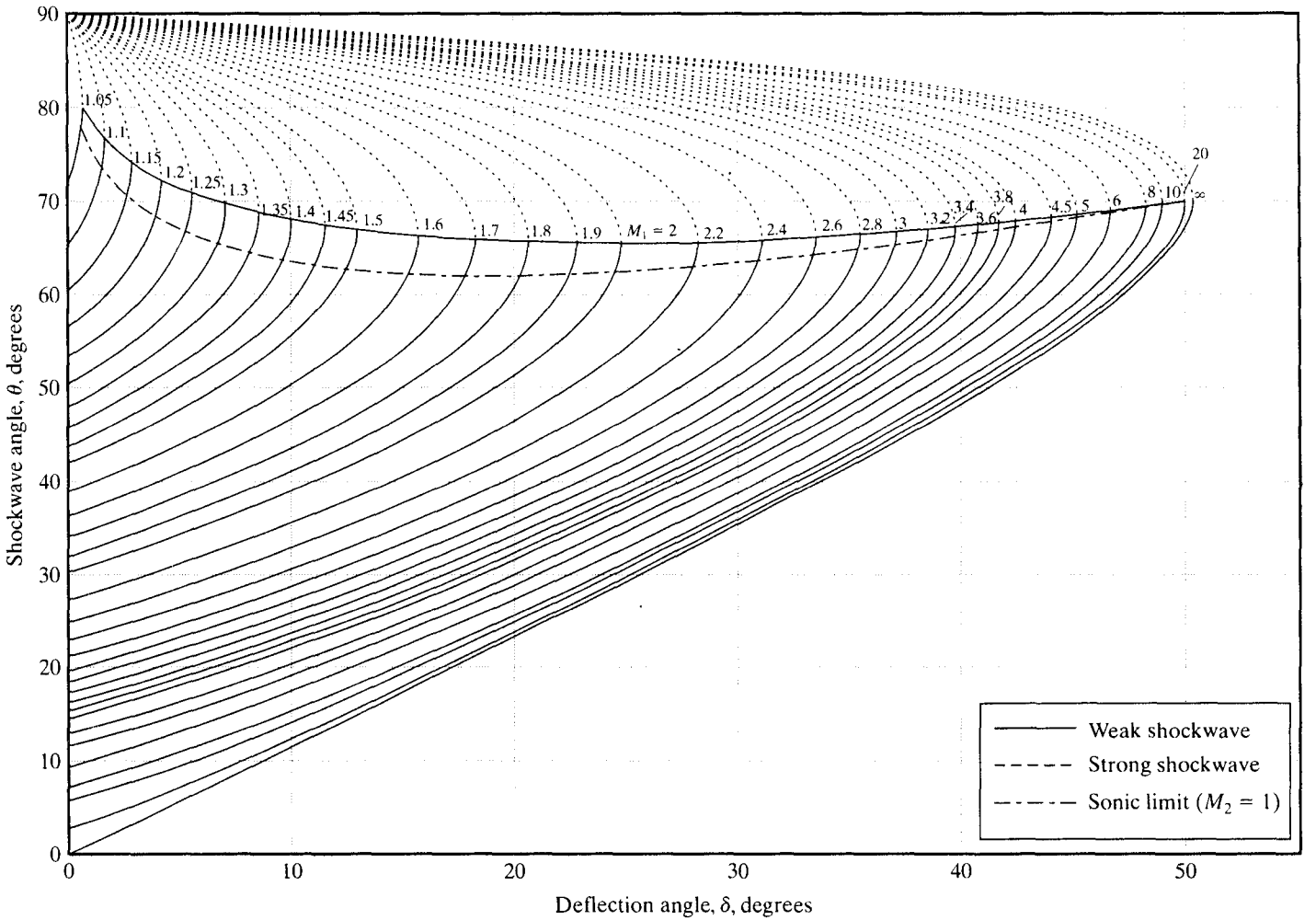

Figure D.2 Variation of shockwave angle with flow-deflection angle for various upstream Mach numbers ($\gamma = 1.3$)

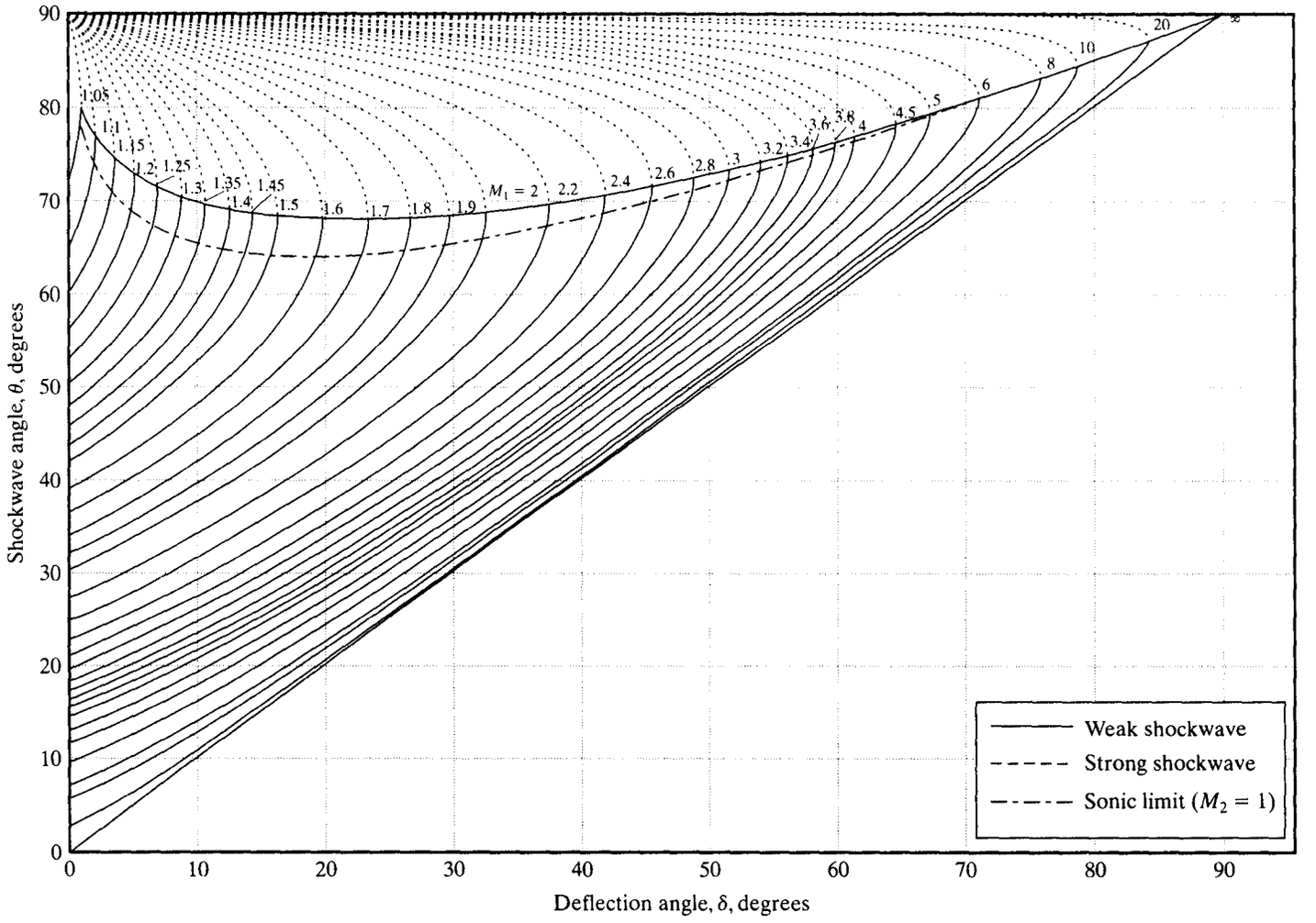

Figure D.3 Variation of shockwave angle with flow-deflection angle for various upstream Mach numbers ($\gamma = 5/3$)

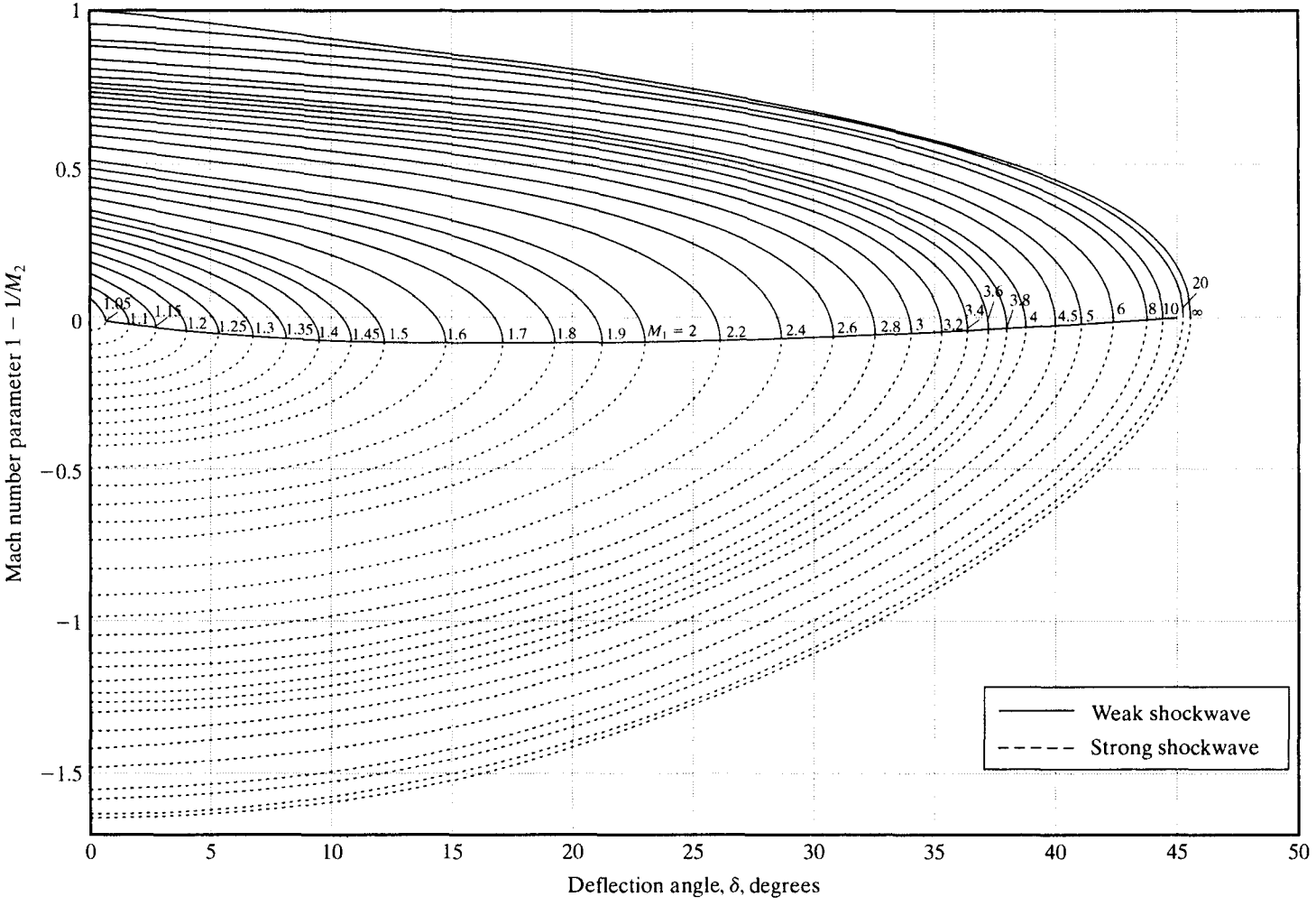

Figure D.4 Variation of Mach number downstream of a shockwave with flow-deflection angle for various upstream Mach numbers ($\gamma = 1.4$)

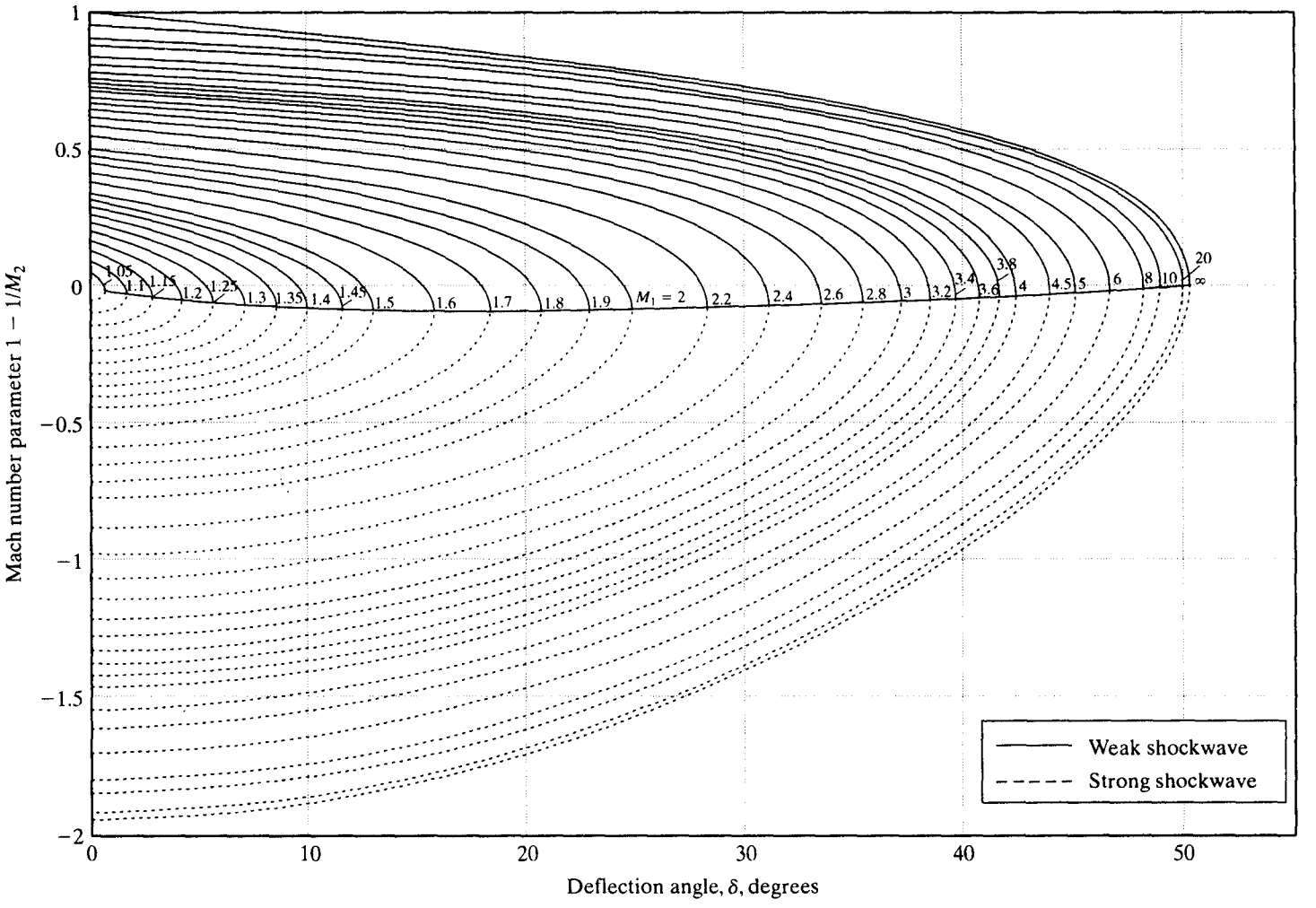

Figure D.5 Variation of Mach number downstream of a shockwave with flow-deflection angle for various upstream Mach numbers ($\gamma = 1.3$)

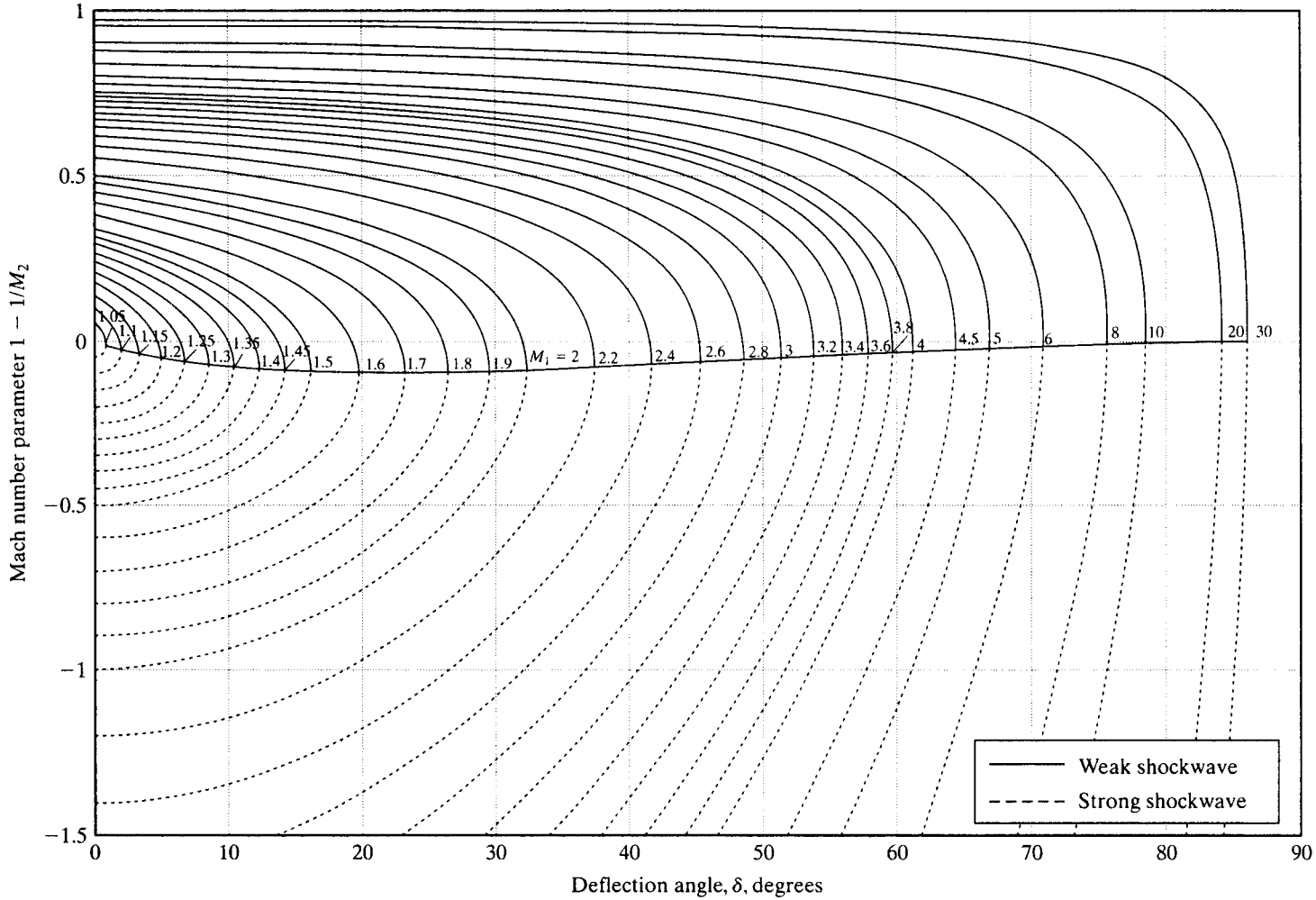

Figure D.6 Variation of Mach number downstream of a shockwave with flow-deflection angle for various upstream Mach numbers ($\gamma = 5/3$)

Appendix E

Prandtl–Meyer Functions

TABLE E.1 Prandtl–Meyer Functions ($\gamma = 1.4$)

M	ν	μ	M	ν	μ
1.00	0.0000	90.0000	1.92	24.1506	31.3882
1.02	0.1257	78.6351	1.94	24.7123	31.0285
1.04	0.3510	74.0576	1.96	25.2711	30.6774
1.06	0.6367	70.6300	1.98	25.8269	30.3347
1.08	0.9680	67.8084	2.00	26.3798	30.0000
1.10	1.3362	65.3800	2.02	26.9295	29.6730
1.12	1.7350	63.2345	2.04	27.4762	29.3535
1.14	2.1600	61.3056	2.06	28.0197	29.0411
1.16	2.6073	59.5497	2.08	28.5600	28.7357
1.18	3.0743	57.9362	2.10	29.0971	28.4369
1.20	3.5582	56.4427	2.12	29.6308	28.1446
1.22	4.0572	55.0520	2.14	30.1613	27.8585
1.24	4.5694	53.7507	2.16	30.6884	27.5785
1.26	5.0931	52.5280	2.18	31.2121	27.3043
1.28	5.6272	51.3752	2.20	31.7325	27.0357
1.30	6.1703	50.2849	2.22	32.2494	26.7726
1.32	6.7213	49.2509	2.24	32.7629	26.5148
1.34	7.2794	48.2682	2.26	33.2730	26.2621
1.36	7.8435	47.3321	2.28	33.7796	26.0144
1.38	8.4130	46.4387	2.30	34.2828	25.7715
1.40	8.9870	45.5847	2.32	34.7825	25.5332
1.42	9.5650	44.7670	2.34	35.2787	25.2995
1.44	10.1464	43.9830	2.36	35.7715	25.0702
1.46	10.7305	43.2302	2.38	36.2607	24.8452
1.48	11.3169	42.5066	2.40	36.7465	24.6243
1.50	11.9052	41.8103	2.42	37.2289	24.4075
1.52	12.4949	41.1395	2.44	37.7077	24.1945
1.54	13.0856	40.4927	2.46	38.1831	23.9854
1.56	13.6770	39.8683	2.48	38.6551	23.7800
1.58	14.2686	39.2652	2.50	39.1236	23.5782
1.60	14.8604	38.6822	2.52	39.5886	23.3799
1.62	15.4518	38.1181	2.54	40.0503	23.1850
1.64	16.0427	37.5719	2.56	40.5085	22.9934
1.66	16.6328	37.0427	2.58	40.9633	22.8051
1.68	17.2220	36.5296	2.60	41.4147	22.6199
1.70	17.8099	36.0319	2.62	41.8628	22.4377
1.72	18.3964	35.5487	2.64	42.3074	22.2586
1.74	18.9814	35.0795	2.66	42.7488	22.0824
1.76	19.5646	34.6235	2.68	43.1868	21.9090
1.78	20.1458	34.1802	2.70	43.6215	21.7385
1.80	20.7251	33.7490	2.72	44.0529	21.5706
1.82	21.3021	33.3293	2.74	44.4810	21.4053
1.84	21.8768	32.9207	2.76	44.9059	21.2427
1.86	22.4492	32.5227	2.78	45.3275	21.0825
1.88	23.0190	32.1349	2.80	45.7459	20.9248
1.90	23.5861	31.7569	2.82	46.1611	20.7695

TABLE E.1 *(Continued)*

M	ν	μ	M	ν	μ
2.84	46.5731	20.6166	3.94	64.9836	14.7029
2.86	46.9820	20.4659	3.96	65.2526	14.6270
2.88	47.3877	20.3175	3.98	65.5197	14.5519
2.90	47.7903	20.1713	4.00	65.7848	14.4775
2.92	48.1898	20.0272	4.02	66.0480	14.4039
2.94	48.5863	19.8852	4.04	66.3093	14.3311
2.96	48.9796	19.7452	4.06	66.5688	14.2590
2.98	49.3700	19.6072	4.08	66.8263	14.1876
3.00	49.7573	19.4712	4.10	67.0820	14.1170
3.02	50.1417	19.3371	4.12	67.3359	14.0470
3.04	50.5231	19.2049	4.14	67.5879	13.9778
3.06	50.9016	19.0745	4.16	67.8381	13.9092
3.08	51.2771	18.9459	4.18	68.0866	13.8414
3.10	51.6497	18.8191	4.20	68.3332	13.7741
3.12	52.0195	18.6939	4.22	68.5782	13.7076
3.14	52.3864	18.5705	4.24	68.8213	13.6417
3.16	52.7505	18.4487	4.26	69.0628	13.5764
3.18	53.1118	18.3285	4.28	69.3026	13.5118
3.20	53.4703	18.2100	4.30	69.5406	13.4477
3.22	53.8261	18.0929	4.32	69.7770	13.3843
3.24	54.1791	17.9774	4.34	70.0118	13.3215
3.26	54.5294	17.8634	4.36	70.2449	13.2593
3.28	54.8770	17.7508	4.38	70.4763	13.1976
3.30	55.2220	17.6397	4.40	70.7062	13.1366
3.32	55.5643	17.5300	4.42	70.9344	13.0761
3.34	55.9040	17.4216	4.44	71.1611	13.0161
3.36	56.2411	17.3147	4.46	71.3862	12.9567
3.38	56.5756	17.2090	4.48	71.6097	12.8979
3.40	56.9075	17.1046	4.50	71.8317	12.8396
3.42	57.2369	17.0016	4.52	72.0522	12.7818
3.44	57.5639	16.8997	4.54	72.2712	12.7246
3.46	57.8883	16.7991	4.56	72.4887	12.6678
3.48	58.2102	16.6997	4.58	72.7046	12.6116
3.50	58.5298	16.6015	4.60	72.9192	12.5559
3.52	58.8469	16.5045	4.62	73.1322	12.5006
3.54	59.1616	16.4086	4.64	73.3438	12.4459
3.56	59.4739	16.3139	4.66	73.5540	12.3916
3.58	59.7838	16.2202	4.68	73.7628	12.3378
3.60	60.0915	16.1276	4.70	73.9701	12.2845
3.62	60.3968	16.0361	4.72	74.1761	12.2316
3.64	60.6998	15.9456	4.74	74.3807	12.1792
3.66	61.0005	15.8562	4.76	74.5839	12.1273
3.68	61.2990	15.7678	4.78	74.7858	12.0758
3.70	61.5953	15.6804	4.80	74.9863	12.0247
3.72	61.8893	15.5939	4.82	75.1855	11.9741
3.74	62.1812	15.5084	4.84	75.3833	11.9239
3.76	62.4709	15.4239	4.86	75.5799	11.8741
3.78	62.7584	15.3402	4.88	75.7752	11.8247
3.80	63.0438	15.2575	4.90	75.9691	11.7757
3.82	63.3271	15.1757	4.92	76.1619	11.7272
3.84	63.6083	15.0948	4.94	76.3533	11.6790
3.86	63.8874	15.0147	4.96	76.5435	11.6313
3.88	64.1645	14.9355	4.98	76.7325	11.5839
3.90	64.4395	14.8572	5.00	76.9202	11.5370
3.92	64.7125	14.7796			