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EMDEN'S FUNCTIONS FOR POLYTROPES WITH NEGATIVE INDEX

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The Emden's equation is numerically integrated for plane-parallel, cylindrical and spherical polytropes with negative index. The polytropic functions are tabulated for 10 values of the polytropic index in the range $-10<n<-0.2$.

Key words: polytrope – numerical integration

1. INTRODUCTION

In the past, the equilibrium structure of polytropic configurations has been extensively studied (see for example Chandrasekhar 1939, Ostriker 1964, Harrison and Lake 1972). In such configurations the pressure p and the density ρ are related by the polytropic law:

$$p=K\,\rho^{1+\frac{1}{n}} \tag{1}$$

where K and n are constants; n is defined as the polytropic index.

Only simple geometric configurations, such as plane-parallel, cylindrical and spherical polytropes were studied. Their structure is found by solving the well known Lane Emden equation (Harrison and Lake 1972):

$$\frac{1}{\xi^m}\frac{\mathrm{d}}{\mathrm{d}\xi}\left(\xi^m\frac{\mathrm{d}\theta}{\mathrm{d}\xi}\right)=\mp\theta^n \tag{2}$$

where $m=0$, 1 and 2 for plane-parallel, cylindrical and spherical configurations respectively.

In eq. (2) and throughout this paper, the upper sign refers to polytropes of index $-1<n<+\infty$, while the lower sign applies when $-\infty<n<-1$.

All the physical parameters (e.g. density, pressure, temperature, etc...) which describe a polytropic configuration can be expressed in terms of the function $\theta(\xi)$ and its first derivative $\theta'\equiv\frac{\mathrm{d}\theta}{\mathrm{d}\xi}$. These functions must satisfy the boundary conditions:

$$\theta(0)=1;\quad \theta'(0)=0 \tag{3}$$

ξ is the dimensionless distance to the mid-plane of the sheets in the case $m=0$, to the axes of the cylinder when $m=1$ and to the centre of the sphere when $m=2$, and so is always positive.

All the previous works were generally concerned with polytropes of positive index. Equation (2) has already been integrated numerically for these polytropes and the functions $\theta(\xi)$ and $\theta'(\xi)$ have been tabulated (Tascione 1972 for $m=0$; Ostriker 1965 for $m=1$; Emden 1932 for $m=2$).

Polytropic configurations with negative index have been studied only in the case $m=2$ (Shu *et al.* 1972; Viala 1972) but no details on the numerical integration of equation (2) and no extensive tables were given. In a next paper (Horedt and Viala, to be submitted to Astron. Astrophys.) the structure of polytropic configurations with negative index will be studied in the three cases $m=0$, 1 and 2 and their stability under external pressure will be considered. For these purposes, equation (2) must be solved and the present paper is concerned with the numerical integration of this equation. In section (2) we study the solution of equation (2) near the origin. In section (3) we give the asymptotic behaviour of this solution near the boundary of the

polytropes. Finally, section (4) gives the results in the form of numerical tables of the functions $\theta(\xi)$, $\theta'(\xi)$ and other physical quantities.

Note that the case $n=-1$ is not considered since it corresponds to configurations in which the pressure is constant throughout. In the absence of magnetic field or rotation, as it is supposed here, such configurations cannot be in hydrostatic equilibrium since no pressure gradients balance gravitational attraction.

The case $n=-\infty$ corresponds to isothermal configurations with $p \propto \rho$ which have been already studied (see references above).

2. SOLUTION OF THE LANE-EMDEN'S EQUATION NEAR THE ORIGIN FOR POLYTROPES OF INDEX $-\infty < n < 0$

The integration is started by writting θ in the form of a series expansion near the origin:

$$\theta(\xi)=a_0+a_1\xi+a_2\xi^2+a_3\xi^3+\ldots \tag{4}$$

From the bondary condition (3) we find immediately:

$$a_0=1;\ a_1=0 \tag{5}$$

The other coefficients a_i are obtained by substituting this series in eq. (2) and comparing terms: it can be seen that, because $a_1=0$, all the odd terms vanish.

We note below the series expansion up to the terms $a_{10}\xi^{10}$:

$$\begin{aligned} m=0:\ \theta(\xi)= 1 &\mp \frac{1}{2!}\xi^2+\frac{n}{4!}\xi^4 \\ &\mp \frac{n(4n-3)}{6!}\xi^6+\frac{n(34n^2-63n+30)}{8!}\xi^8 \\ &\mp \frac{n(496n^3-1554n^2+1689n-630)}{10!}\xi^{10}+\ldots \end{aligned} \tag{6}$$

$$\begin{aligned} m=1:\ \theta(\xi)= 1 &\mp \frac{1}{(1!)^2 2^2}\xi^2+\frac{n}{(2!)^2 2^4}\xi^4 \\ &\mp \frac{n(3n-2)}{(3!)^2\,2^6}\xi^6+\frac{n(18n^2-29n+12)}{(4!)^2\,2^8}\xi^8 \\ &\mp \frac{n(180n^3-505n^2+470n-144)}{(5!)^2\,2^{10}}\xi^{10}+\ldots \end{aligned} \tag{7}$$

$$\begin{aligned} m=2:\ \theta(\xi)= 1 &\mp \frac{1}{3!}\xi^2+\frac{n}{5!}\xi^4 \\ &\mp \frac{n(8n-5)}{3\times 7!}\xi^6+\frac{n(122n^2-183n+70)}{9\times 9!}\xi^8 \\ &\mp \frac{n(5032n^3-12642n^2+10805n-3150)}{45\times 11!}\xi^{10}+\ldots \end{aligned} \tag{8}$$

Ten terms were used to calculate $\theta(\xi)$ from $\xi=0$ to some value ξ_1, which was choosen in such a way that the remaining error in θ and θ', as a consequence of dropping all terms in the series beyond $a_{20}\,\xi^{20}$, is less than 10^{-5}. This value of ξ_1 depends of course on m and n.

Beyond $\xi=\xi_1$, eq. (2) was integrated numerically using Adams' method.

3. BEHAVIOUR OF THE SOLUTION OF THE LANE-EMDEN'S EQUATION NEAR THE BOUNDARY OF POLYTROPES WITH NEGATIVE INDEX

The mass distribution inside polytropic configurations, that is the mass per unit area between planes at $\pm\xi$ in the case $m=0$, the mass inside a cylinder of radius ξ and length unity when $m=1$ and the mass inside a sphere of radius ξ when $m=2$, is proportional to $\mp\xi^m\theta'$ (Horedt and Viala, to be submitted to Astron. Astrophys.). Since this quantity must be positive, θ' must be negative for polytropes of index $-1<n<0$ and positive when $-\infty<n<-1$.

So, for polytropes of index $-1<n<0$, the function $\theta(\xi)$ decrease monotically from the values 1, when $\xi=0$, and 0 which is reached for a finite value ξ^*. This fixes the extension of these configurations since θ^{n+1}, proportional to the pressure, also becomes equal to zero. In this case, equation (2) must be solved between $\xi=0$ and $\xi=\xi^*$.

In the case $-\infty<n<-1$, the function $\theta(\xi)$ increase monotically from 1 (when $\xi=0$) and equation (2) must be integrated up to the boundary of the configurations, that is up to some value $\xi=\xi^*$ at which $\theta^{n+1}=0$. To determine the extension of these configurations given by ξ^* we shall study the behaviour of $\theta(\xi)$ near the boundary of the polytrope in the three cases $m=0$, 1 and 2.

3.1. Plane-parallel polytropes ($m=0$)

Equation (2) reduces to:

$$\frac{d^2\theta}{d\xi^2}=\theta^n \tag{9}$$

Substituting $f=\dfrac{d\theta}{d\xi}$, we get:

$$f\frac{df}{d\theta}=\theta^n \tag{10}$$

and the boundary condition (3) becomes:

$$\theta(0)=1,\ f(0)=0 \tag{11}$$

The solution of equation (10) is then:

$$f=\frac{d\theta}{d\xi}=\sqrt{-\frac{2}{n+1}(1-\theta^{n+1})} \tag{12}$$

We preserve only the positive sign before the radical because the negative solution is physically meaningless since $\frac{d\theta}{d\xi}$ must be positive.

As θ^{n+1} (proportional to the pressure) tends to 0, the integration of (12) yields the solution $\theta(\xi)$ near the boundary of a plane-symmetric polytrope:

$$\theta(\xi)\simeq\sqrt{-\frac{2}{n+1}}\,\xi+\text{const.} \tag{13}$$

Now, near the boundary $\theta^{n+1}\to 0$, and when $n<-1$, θ tends to infinity: we can see from (13) that ξ, which is the dimensionless distance to the mid-plane, also tends to infinity if $\theta\to+\infty$. Therefore a plane parallel polytrope of index $n<-1$ extends to infinity. Nevertheless its mass per unit area, proportional to $\frac{d\theta}{d\xi}$ remains finite since

$$\frac{d\theta}{d\xi} \to \sqrt{-\frac{2}{n+1}} \quad \text{as } \xi \to +\infty$$

3.2. Cylindrical ($m=1$) and spherical ($m=2$) polytropes

Cylindrical and spherical polytropes are much more complicated to study since equation (2) has no analytic solution. A method used by Chandrasekhar (1939) for polytropes of index $n>5$ will be used here to find the behaviour of $\theta(\xi)$ near the boundary of the configuration.

$$\text{Putting } \xi = e^{-t},\ z = \xi^k\,\theta \tag{14}$$

$$\text{with } k = \frac{2}{n-1} \tag{15}$$

Equation (2) becomes:

$$\frac{d^2z}{dt^2} + (2k+1-m)\frac{dz}{dt} + (k+1-m)z - z^n = 0 \tag{16}$$

Introducing a new function:

$$y = \frac{dz}{dt} \tag{17}$$

We may write:

$$\frac{d^2z}{dt^2} = \frac{dy}{dt} = \frac{dy}{dz}\frac{dz}{dt} = y\frac{dy}{dz}$$

The differential equation for $y\,(z)$ is then:

$$y\frac{dy}{dz} + (2k+1-m)y + k(k+1-m)z - z^n = 0 \tag{18}$$

This equation replaces (2) but is of first order. The order has been reduced by one because y and z are homology invariant functions, as may easily be shown (Chandrasekhar 1939).

If $-\infty < n < -1$, then $-1 < k < 0$; with these conditions $k(k+1-m) > 0$ for $m \geq 1$, and equation (18) has a singular point at

$$y = 0,\ z = z_s = \left[k(k+1-m)\right]^{\frac{k}{2}} \tag{19}$$

Let us study the behaviour of the solution $y(z)$ of the equation (18) near this singular point. We may write:

$$z = z_s + z_1 \tag{20}$$

Where $$z_1 << z_s$$

Then:

$$(z_s+z_1)^n = z_s^n\left(1+\frac{z_1}{z_s}\right)^n \sim z_s^n\left(1+n\frac{z_1}{z_s}\right) \tag{21}$$

Using (14) and (19)–(21), equation (18) becomes:

$$y\frac{dy}{dz_1}+(2k+1-m)y-2(k+1-m)z_1=0 \tag{22}$$

Substituting (17) and (20), this becomes:

$$\frac{d^2z_1}{dt^2}+(2k+1-m)\frac{dz_1}{dt}-2(k+1-m)z_1=0 \tag{23}$$

This linear and homogeneous equation of second order may be easily integrated. Its characteristic equation is:

$$x^2+(2k+1-m)x-2(k+1-m)=0 \tag{24}$$

The discriminant of this equation is:

$$\Delta=4k^2+4k(3-m)+(1-m)(9-m) \tag{25}$$

The roots of the equation $\Delta=0$ are:

$$k'=0 \qquad ,k''=-2 \qquad \text{for } m=1$$

and

$$k'=-\tfrac{1}{2}+\sqrt{2}\ ,\ k''=-\tfrac{1}{2}-\sqrt{2} \qquad \text{for } m=2$$

Now, since $-1<k<0$ when $-\infty<n<-1$, in the two above cases k lies between the roots of the equation $\Delta=0$, so that Δ is always negative and the roots of the characteristic equation (24) are imaginary:

$$x_1,\ x_2=\frac{m-1-2k\pm i\sqrt{-4k^2-4k(3-m)-(1-m)(9-m)}}{2} \tag{26}$$

We shall now study the cases $m=1$ and $m=2$ separately.

3.3 Cylindrical polytropes ($m=1$)

The solution of equation (23) is:

$$z_1=A\exp(-kt)\cos(\sqrt{-k(k+2)}t+\delta) \tag{27}$$

where A and δ are integration constants.

Substituting in (20) and (17), we obtain:

$$z=k^k+A\exp(-kt)\cos F(t) \tag{28}$$

$$y=-A\exp(-kt)\left[k\cos F(t)+\sqrt{-k(k+2)}\sin F(t)\right] \tag{29}$$

with $F(t)=\sqrt{-k(k+2)}t+\delta$

Since $-1<k<0$, then $z\to z_s$ and $y\to 0$ when $t\to-\infty$, and the solution $y(z)$ of equation (18) approaches the singular point ($y=0$, $z=z_s$) along a spiral path because of the presence of the sine and cosine terms.

From (14), $t\to-\infty$ corresponds to $\xi\to+\infty$. Returning now to the θ, ξ variables, we obtain, from Eqs. (14) and (28) the asymptotic behaviour of the solution $\theta(\xi)$ in the limit $\xi\to+\infty$:

$$\theta(\xi)\simeq\xi^{-k}[k^k+A\xi^k\cos F(\xi)] \tag{30}$$

with $F(\xi)=\sqrt{-k(k+2)}\,\mathrm{Log}\,\xi+\delta$

We can see from this that $\theta(\xi)\to+\infty$ as $\xi\to+\infty$. Therefore, the density ($\propto\theta^n$) and the pressure ($\propto\theta^{n+1}$) tend to 0, as ξ tends to infinity. In the absence of an external pressure a cylindrical polytrope of index $n<-1$ extends to infinity. Its mass per unit length, which is proportional to $\xi\frac{d\theta}{d\xi}$, is also infinite since

$$\xi\frac{d\theta}{d\xi}\simeq-k\xi^{-k}\left[k^k+A\xi^k\cos F(\xi)\right]+\left[Ak\cos F(\xi)+A\sqrt{-k(k+2)}\sin F(\xi)\right]\to+\infty \text{ as } \xi\to+\infty$$

3.4. Spherical polytropes ($m=2$)

For $m=2$, the expressions for z_1, z and y are:

$$z_1=A\exp\left(\frac{1-2k}{2}t\right)\cos G(t) \tag{31}$$

$$z=\left[k(k-1)\right]^{\frac{k}{2}}+A\exp\left(\frac{1-2k}{2}t\right)\cos G(t) \tag{32}$$

$$y=A\exp\left(\frac{1-2k}{2}t\right)\left[\frac{1-2k}{2}\cos G(t)-\frac{\sqrt{7-4k-4k^2}}{2}\sin G(t)\right] \tag{33}$$

with $G(t)=\dfrac{\sqrt{7-4k-4k^2}}{2}t+\delta$

Since $\frac{1}{2}<\frac{1-2k}{2}<\frac{3}{2}$, then $z\to z_s$ and $y\to0$ when $t\to-\infty$: The solution $y(z)$ of equation (18) approaches the singular point ($y=0$, $z=z_s$) along a spiral path, as for cylindrical polytropes.

Returning to the variables θ and ξ, we get as before, from Eqs (14) and (32), the asymptotic behaviour of the solution $\theta(\xi)$ for $\xi\to+\infty$

$$\theta(\xi)\simeq\xi^{-k}\left[(k(k-1))^{\frac{k}{2}}+A\xi^{\frac{2k-1}{2}}\cos G(\xi)\right] \tag{34}$$

with $G(\xi)=\dfrac{\sqrt{7-4k-4k^2}}{2}\mathrm{Log}\,\xi+\delta$

Thus, $\theta\to+\infty$, $\theta^n\to0$ and $\theta^{n+1}\to0$ when $\xi\to+\infty$. This result is the same as the one for cylindrical polytropes: in the absence of an external pressure, a spherical polytrope of index $n<-1$ extends to infinity. Its mass, proportional to $\xi^2\frac{d\theta}{d\xi}$, is also infinite since

$$\xi^2\frac{d\theta}{d\xi}\simeq-k\xi^{-k+1}\left[(k(k-1))^{\frac{k}{2}}+A\xi^{\frac{2k-1}{2}}\cos G(\xi)\right]+\xi^{\frac{1}{2}}\left[\frac{A(2k-1)}{2}\cos G(\xi)-A\frac{\sqrt{7-4k-4k^2}}{2}\sin G(\xi)\right]\to+\infty$$
$$\text{as } \xi\to+\infty$$

4. RESULTS

Equation (2) was numerically integrated for a set of values of m and n ($m=0$, 1 and 2; $n=-0.2$, -0.5, -0.8, -1.2, -1.5, -2, -3, -4, -5, -10). The following quantities are tabulated in the tables 1 to 30 below:

column 1: ξ $\propto$ distance
column 2: θ $\propto$ temperature
column 3: θ' $\propto$ temperature gradient
column 4: θ^n $\propto$ density
column 5: θ^{n+1} $\propto$ pressure
column 6: $\mp\xi^m\theta'$ $\propto$ mass distribution: $\mathcal{M}(\xi)$

In these tables θ and θ' are correct to five places of decimals. The errors on the other quantities tabulated have been evaluated by using the formulae:

$$\frac{\Delta\theta^n}{\theta^n}=|n|\frac{\Delta\theta}{\theta} \tag{35}$$

$$\frac{\Delta\theta^{n+1}}{\theta^{n+1}}=|n+1|\frac{\Delta\theta}{\theta} \tag{36}$$

$$\frac{\Delta\mathcal{M}}{\mathcal{M}}=\frac{\Delta\theta'}{\theta'} \tag{37}$$

The last decimal place of these tabulated quantities is uncertain, except in the case of the first line of the tables where the boundary conditions (3) lead to an exact result.

The extension of the configurations, determined by the value ξ^* at which $\theta^{n+1}=0$, is given in the last line of column 1. For polytropes of index $-1<n<0$, ξ^* is finite. For polytropes of index $-\infty<n<-1$, equation (2) was integrated up to $\xi=100$, the last line of the corresponding tables gives the values of the quantities at the boundary, that is for $\xi=+\infty$, these values are found from the work of section (3).

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Table 1 $M=0$; $N=-0.2$

ξ	θ	θ'	θ^n	θ^{n+1}	$-\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.050	0.998749	-0.050004	1.000250	0.998999	0.050004
0.100	0.994999	-0.100033	1.001002	0.995997	0.100033
0.150	0.988745	-0.150112	1.002266	0.990986	0.150112
0.200	0.979986	-0.200268	1.004050	0.983956	0.200268
0.250	0.968717	-0.250527	1.006375	0.974894	0.250527
0.300	0.954931	-0.300915	1.009265	0.963779	0.300915
0.350	0.938622	-0.351463	1.012748	0.950589	0.351463
0.400	0.919782	-0.402201	1.016864	0.935293	0.402201
0.450	0.898399	-0.453161	1.021659	0.917857	0.453161
0.500	0.874461	-0.504379	1.027191	0.898240	0.504379
0.550	0.847956	-0.555894	1.033534	0.876392	0.555894
0.600	0.818866	-0.607747	1.040775	0.852257	0.607747
0.650	0.787175	-0.659988	1.049024	0.825766	0.659988
0.700	0.752860	-0.712669	1.058416	0.796840	0.712669
0.750	0.715899	-0.765852	1.069126	0.765388	0.765852
0.800	0.676265	-0.819607	1.081374	0.731297	0.819607
0.850	0.633928	-0.874019	1.095448	0.694435	0.874019
0.900	0.588851	-0.929189	1.111728	0.654642	0.929189
0.950	0.540994	-0.985238	1.13073	0.611722	0.985238
1.000	0.490310	-1.042319	1.15319	0.565427	1.042319
1.050	0.436742	-1.100633	1.18018	0.515442	1.100633
1.100	0.380222	-1.160441	1.21336	0.461349	1.160441
1.150	0.320666	-1.222116	1.25542	0.402571	1.222116
1.200	0.257970	-1.286210	1.31125	0.338263	1.286210
1.250	0.191990	-1.353634	1.39104	0.267069	1.353634
1.300	0.122523	-1.426134	1.52179	0.186455	1.426134
1.310	0.108185	-1.441539	1.56014	0.168785	1.441539
1.320	0.093691	-1.457360	1.60568	0.150438	1.457360
1.330	0.079036	-1.473685	1.66124	0.131299	1.473685
1.340	0.064215	-1.490636	1.73168	0.111201	1.490636
1.350	0.049220	-1.508398	1.82628	0.089891	1.508398
1.360	0.034043	-1.527308	1.96604	0.066931	1.527308
1.370	0.018668	-1.548071	2.21705	0.041389	1.548071
1.375	0.010899	-1.559717	2.4689	0.026911	1.559717
1.376	0.009338	-1.562225	2.5464	0.023779	1.562225
1.377	0.007775	-1.564817	2.6415	0.02053	1.564817
1.378	0.006209	-1.567516	2.7630	0.01715	1.567516
1.379	0.004639	-1.570358	2.9269	0.01358	1.570358
1.380	0.003068	-1.573401	3.1813	0.00976	1.573401
1.381	0.001492	-1.576796	3.674	0.00548	1.576796
1.381945	0.0	-1.581138	$+\infty$	0.0	1.581138

Table 2 $M=0$; $N=-0.5$

ξ	θ	θ'	θ^n	θ^{n+1}	$-\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.050	0.998749	-0.050010	1.000625	0.999374	0.050010
0.100	0.994997	-0.100083	1.002509	0.997495	0.100083
0.150	0.988739	-0.150282	1.005677	0.994353	0.150282
0.200	0.979966	-0.200673	1.010168	0.989932	0.200673
0.250	0.968667	-0.251322	1.016044	0.984209	0.251322
0.300	0.954828	-0.302302	1.023379	0.977153	0.302302
0.350	0.938430	-0.353687	1.032283	0.968726	0.353687
0.400	0.919451	-0.405558	1.042882	0.958883	0.405558
0.450	0.897865	-0.458006	1.055344	0.947557	0.458006
0.500	0.873640	-0.511127	1.069876	0.934687	0.511127
0.550	0.846739	-0.565032	1.086738	0.920184	0.565032
0.600	0.817121	-0.619845	1.106257	0.903947	0.619845
0.650	0.784737	-0.675709	1.128854	0.885854	0.675709
0.700	0.749530	-0.732791	1.155062	0.865754	0.732791
0.750	0.711434	-0.791287	1.185583	0.843465	0.791287
0.800	0.670374	-0.851436	1.221353	0.818763	0.851436
0.850	0.626258	-0.913531	1.263638	0.791365	0.913531
0.900	0.578982	-0.977938	1.314217	0.760908	0.977938
0.950	0.528418	-1.045133	1.375659	0.726923	1.045133
1.000	0.474412	-1.115748	1.45185	0.688775	1.115748
1.050	0.416772	-1.190664	1.54898	0.645578	1.190664
1.100	0.355253	-1.271171	1.67775	0.596031	1.271171
1.120	0.329489	-1.305353	1.74212	0.574012	1.305353
1.140	0.303029	-1.340922	1.81658	0.550481	1.340922
1.160	0.275842	-1.378103	1.90401	0.525206	1.378103
1.180	0.247892	-1.417195	2.00847	0.497888	1.417195
1.200	0.219139	-1.458597	2.13618	0.468122	1.458597
1.220	0.189529	-1.502863	2.29700	0.435350	1.502863
1.240	0.159000	-1.550808	2.50783	0.398748	1.550808
1.250	0.143364	-1.576533	2.64106	0.378634	1.576533
1.260	0.127464	-1.603718	2.80094	0.357021	1.603718
1.270	0.111284	-1.632674	2.99766	0.333592	1.632674
1.280	0.094803	-1.663848	3.2477	0.30790	1.663848
1.290	0.077997	-1.697903	3.5806	0.27928	1.697903
1.300	0.060832	-1.735923	4.0543	0.24664	1.735923
1.310	0.043259	-1.779899	4.8078	0.20798	1.779899
1.320	0.025200	-1.834397	6.2992	0.15874	1.834397
1.330	0.006484	-1.917782	12.4179	0.08052	1.917782
1.331	0.004559	-1.931293	14.809	0.06752	1.931293
1.332	0.002621	-1.948135	19.52	0.0511	1.948135
1.333	0.000661	-1.974124	38.88	0.0257	1.974124
1.333333	0.0	-1.999999	$+\infty$	0.0	1.999999

Table 3 $M=0$; $N=-0.8$

ξ	θ	θ'	θ^n	θ^{n+1}	$-\theta'$
0.0	1.000000	0.0	1.00000	1.000000	0.0
0.050	0.998749	-0.050016	1.00099	0.999749	0.050016
0.100	0.994996	-0.100133	1.00402	0.998997	0.100133
0.150	0.988733	-0.150453	1.00910	0.997736	0.150453
0.200	0.979946	-0.201080	1.01633	0.995956	0.201080
0.250	0.968618	-0.252124	1.02582	0.993643	0.252124
0.300	0.954724	-0.303704	1.03776	0.990776	0.303704
0.350	0.938236	-0.355944	1.05232	0.987330	0.355944
0.400	0.919117	-0.408985	1.06979	0.983273	0.408985
0.450	0.897322	-0.462979	1.09052	0.978565	0.462979
0.500	0.872800	-0.518100	1.11498	0.973157	0.518100
0.550	0.845490	-0.574548	1.14370	0.966989	0.574548
0.600	0.815319	-0.632554	1.17742	0.959987	0.632554
0.650	0.782204	-0.692391	1.21713	0.952059	0.692391
0.700	0.746044	-0.754390	1.26411	0.943089	0.754390
0.750	0.706722	-0.818953	1.32008	0.932931	0.818953
0.800	0.664098	-0.886587	1.38744	0.921396	0.886587
0.850	0.618001	-0.957943	1.46962	0.908234	0.957943
0.900	0.568227	-1.033880	1.57173	0.893108	1.033880
0.950	0.514518	-1.115579	1.70167	0.875548	1.115579
1.000	0.456545	-1.204724	1.8723	0.854863	1.204724
1.020	0.432071	-1.242998	1.9568	0.845495	1.242998
1.040	0.406813	-1.283079	2.0533	0.835370	1.283079
1.060	0.380734	-1.325237	2.1651	0.824374	1.325237
1.080	0.353788	-1.369816	2.2961	0.812360	1.369816
1.100	0.325922	-1.417250	2.4519	0.799140	1.417250
1.120	0.297075	-1.468112	2.6405	0.784464	1.468112
1.140	0.267170	-1.523174	2.8744	0.767993	1.523174
1.160	0.236113	-1.583523	3.1732	0.749245	1.583523
1.180	0.203783	-1.650751	3.5699	0.727501	1.650751
1.200	0.170020	-1.727373	4.1265	0.701617	1.727373
1.210	0.152535	-1.770444	4.5068	0.686552	1.770444
1.220	0.134598	-1.817722	4.9747	0.669588	1.817722
1.230	0.116162	-1.870428	5.5968	0.650149	1.870428
1.240	0.097165	-1.930443	6.4564	0.627338	1.930443
1.250	0.077519	-2.000930	5.9962	0.599627	2.000930
1.260	0.057092	-2.087947	9.8794	0.564047	2.087947
1.270	0.035659	-2.205955	14.396	0.51337	2.205955
1.280	0.012703	-2.413251	32.875	0.41762	2.413251
1.281	0.010271	-2.448979	38.967	0.40024	2.448979
1.282	0.007801	-2.492335	48.55	0.37881	2.492335
1.283	0.005282	-2.548702	66.32	0.35039	2.548702
1.284	0.002695	-2.633834	113.5	0.30627	2.633834
1.284989	0.0	-3.162276	$+\infty$	0.0	3.162276

Table 4 $M=0$; $N=-1.2$

ξ	θ	θ'	θ^n	θ^{n+1}	θ'
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.004995	0.099800	0.994038	0.999003	0.099800
0.2	1.019920	0.198424	0.976607	0.996062	0.198424
0.3	1.044604	0.294781	0.948981	0.991310	0.294781
0.4	1.078770	0.387943	0.913030	0.984950	0.387943
0.5	1.122061	0.477182	0.870923	0.977229	0.477182
0.6	1.174059	0.561995	0.824844	0.968416	0.561995
0.7	1.234303	0.642085	0.776772	0.958772	0.642085
0.8	1.302314	0.717338	0.728351	0.948542	0.717338
0.9	1.377610	0.787786	0.680844	0.937939	0.787786
1.0	1.459716	0.853568	0.635152	0.927142	0.853568
1.2	1.642556	0.972030	0.551284	0.905515	0.972030
1.4	1.847485	1.074841	0.478743	0.884471	1.074842
1.6	2.071600	1.164268	0.417284	0.864447	1.164268
1.8	2.312441	1.242414	0.365691	0.845640	1.242414
2.0	2.567936	1.311103	0.322477	0.828100	1.311103
2.2	2.836354	1.371866	0.286211	0.811797	1.371867
2.4	3.116240	1.425967	0.255648	0.796661	1.425968
2.6	3.406366	1.474437	0.229747	0.782603	1.474437
2.8	3.705696	1.518121	0.207661	0.769530	1.518121
3.0	4.013342	1.557710	0.188708	0.757353	1.557710
3.2	4.328545	1.593776	0.172341	0.745987	1.593776
3.4	4.650649	1.626789	0.158118	0.735355	1.626790
3.6	4.979084	1.657143	0.145686	0.725397	1.657143
3.8	5.313351	1.685164	0.134758	0.716021	1.685165
4.0	5.653013	1.711130	0.125101	0.707202	1.711131
4.2	5.997682	1.735276	0.116525	0.698881	1.735277
4.4	6.347016	1.757803	0.108872	0.691012	1.757803
4.6	6.700707	1.778878	0.102012	0.683558	1.778879
4.8	7.058481	1.798654	0.095839	0.676484	1.798654
5.0	7.420090	1.817254	0.090262	0.669758	1.817255
5.5	8.339480	1.859320	0.078457	0.654292	1.859320
6.0	9.278532	1.896106	0.069027	0.640477	1.896106
6.5	10.234879	1.928639	0.061362	0.628034	1.928640
7.0	11.206593	1.957690	0.055034	0.616744	1.957691
7.5	12.192088	1.983846	0.049740	0.606435	1.983846
8.0	13.190034	2.007565	0.045258	0.596967	2.007566
8.5	14.199309	2.029213	0.041426	0.588229	2.029213
9.0	15.218951	2.049080	0.038118	0.580126	2.049080
9.5	16.248132	2.067403	0.035239	0.572584	2.067403
10.0	17.286130	2.084378	0.032716	0.565536	2.084379
11.0	19.386124	2.114908	0.028510	0.552715	2.114909
12.0	21.514700	2.141684	0.025160	0.541318	2.141684
13.0	23.668488	2.165439	0.022438	0.531087	2.165439
14.0	25.844754	2.186719	0.020190	0.521825	2.186719
15.0	28.041241	2.205941	0.018308	0.513381	2.205942
16.0	30.256060	2.223430	0.016711	0.505635	2.223430
17.0	32.487610	2.239441	0.015344	0.498489	2.239441
18.0	34.734519	2.254180	0.014160	0.491867	2.254180
19.0	36.995602	2.267813	0.013128	0.485702	2.267813
20.0	39.269824	2.280478	0.012221	0.479941	2.280479
25.0	50.809561	2.332726	0.008971	0.455838	2.332727
30.0	62.576141	2.372258	0.006987	0.437238	2.372259
35.0	74.518754	2.403688	0.005666	0.422227	2.403689
40.0	86.603811	2.429557	0.004731	0.409725	2.429557
45.0	98.807643	2.451400	0.004038	0.399063	2.451400
50.0	111.112779	2.470212	0.003508	0.389804	2.470212
55.0	123.505852	2.486669	0.003090	0.381647	2.486669
60.0	135.976346	2.501247	0.002753	0.374375	2.501248
65.0	148.515796	2.514300	0.002476	0.367828	2.514301
70.0	161.117258	2.526092	0.002246	0.361885	2.526092
75.0	173.774948	2.536821	0.002051	0.356453	2.536822
80.0	186.483976	2.546651	0.001884	0.351456	2.546651
85.0	199.240169	2.555705	0.001740	0.346836	2.555706
90.0	212.039919	2.564090	0.001615	0.342544	2.564090
95.0	224.880089	2.571885	0.001505	0.338539	2.571886
100.0	237.757920	2.579165	0.001408	0.334790	2.579165
$+\infty$	$+\infty$	$\sqrt{10}$	0.0	0.0	$\sqrt{10}$

Table 5 $M=0$; $N=-1.5$

ξ	θ	θ'	θ^n	θ^{n+1}	θ'
0.0	1.CCCCC0	0.0	1.000000	1.000000	0.0
0.1	1.004993	0.099751	0.992555	0.997512	0.099751
0.2	1.019901	0.198035	0.970873	0.990195	0.198035
0.3	1.044506	0.293510	0.936770	0.978462	0.293510
0.4	1.078472	0.385062	0.892866	0.962931	0.385062
0.5	1.121360	0.471856	0.842135	0.944337	0.471856
0.6	1.172666	0.553358	0.784477	0.923448	0.553358
0.7	1.231846	0.629306	0.731416	0.900993	0.629306
0.8	1.298341	0.699662	0.675953	0.877618	0.699662
0.9	1.371597	0.764565	0.622529	0.853860	0.764565
1.0	1.451081	0.824268	0.572087	0.830145	0.824268
1.2	1.626750	0.929425	0.481968	0.784042	0.929425
1.4	1.821749	1.018049	0.406693	0.740893	1.018050
1.6	2.033060	1.093005	0.344964	0.701333	1.093006
1.8	2.258208	1.156798	0.294682	0.665453	1.156799
2.0	2.495174	1.211499	0.253716	0.633066	1.211500
2.2	2.742314	1.258780	0.220203	0.603867	1.258781
2.4	2.998282	1.299974	0.192615	0.577515	1.299975
2.6	3.261970	1.336141	0.169738	0.553681	1.336141
2.8	3.532460	1.368120	0.150620	0.532060	1.368121
3.0	3.808984	1.396589	0.134519	0.512383	1.396590
3.2	4.090898	1.422091	0.120857	0.494413	1.422091
3.4	4.377653	1.445065	0.109178	0.477946	1.445065
3.6	4.668780	1.465871	0.099127	0.462805	1.465871
3.8	4.963876	1.484804	0.090420	0.448837	1.484805
4.0	5.262594	1.502113	0.082832	0.435913	1.502114
4.2	5.564627	1.518001	0.076180	0.423918	1.518001
4.4	5.869711	1.532639	0.070319	0.412754	1.532639
4.6	6.177609	1.546172	0.065128	0.402336	1.546173
4.8	6.488115	1.558727	0.060509	0.392591	1.558728
5.0	6.801042	1.570410	0.056381	0.383453	1.570410
5.5	7.592914	1.596360	0.047795	0.362907	1.596361
6.0	8.396773	1.618518	0.041099	0.345099	1.618518
6.5	9.210935	1.637688	0.035772	0.329494	1.637688
7.0	10.034062	1.654459	0.031461	0.315690	1.654459
7.5	10.865070	1.669276	0.027922	0.303377	1.669277
8.0	11.703071	1.682481	0.024977	0.292314	1.682481
8.5	12.547326	1.694332	0.022499	0.282308	1.694333
9.0	13.397213	1.705042	0.020392	0.273207	1.705042
9.5	14.252205	1.714774	0.018585	0.264885	1.714775
10.0	15.111849	1.723667	0.017022	0.257241	1.723668
11.0	16.843574	1.739357	0.014466	0.243659	1.739357
12.0	18.589812	1.752788	0.012476	0.231932	1.752788
13.0	20.348560	1.764444	0.010894	0.221683	1.764445
14.0	22.118228	1.774676	0.009613	0.212630	1.774677
15.0	23.897528	1.783747	0.008559	0.204561	1.783747
16.0	25.685402	1.791855	0.007681	0.197313	1.791855
17.0	27.480969	1.799155	0.006941	0.190758	1.799156
18.0	29.283487	1.805774	0.006310	0.184794	1.805774
19.0	31.092323	1.811807	0.005767	0.179338	1.811807
20.0	32.906933	1.817333	0.005297	0.174323	1.817334
25.0	42.051984	1.839338	0.003667	0.154207	1.839339
30.0	51.290090	1.855121	0.002722	0.139631	1.855121
35.0	60.596951	1.867124	0.002119	0.128461	1.867124
40.0	69.957202	1.876635	0.001709	0.119559	1.876635
45.0	79.360418	1.884405	0.001414	0.112253	1.884406
50.0	88.799151	1.890903	0.001195	0.106119	1.890904
55.0	98.267866	1.896441	0.001026	0.100877	1.896441
60.0	107.762318	1.901230	0.000893	0.096331	1.901230
65.0	117.279173	1.905422	0.000787	0.092339	1.905423
70.0	126.815752	1.909135	0.000700	0.088800	1.909135
75.0	136.369867	1.912450	0.000627	0.085632	1.912450
80.0	145.939704	1.915434	0.000567	0.082777	1.915434
85.0	155.723141	1.918138	0.000515	0.080186	1.918138
90.0	165.120683	1.920602	0.000471	0.077821	1.920602
95.0	174.729420	1.922859	0.000432	0.075651	1.922860
100.0	184.348991	1.924939	0.000399	0.073681	1.924940
$+\infty$	$+\infty$	2.0	0.0	0.0	2.0

Table 6 $M=0$; $N=-2$

ξ	θ	θ'	θ^n	θ^{n+1}	θ'
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.004991	0.099668	0.990090	0.995033	0.099668
0.2	1.019868	0.197390	0.961416	0.980518	0.197390
0.3	1.044346	0.291421	0.916876	0.957536	0.291421
0.4	1.077983	0.380372	0.860550	0.927658	0.380672
0.5	1.120219	0.463287	0.796881	0.892682	0.463287
0.6	1.170421	0.539642	0.729987	0.854393	0.539642
0.7	1.227923	0.609289	0.663219	0.814382	0.609289
0.8	1.292060	0.672372	0.599010	0.773957	0.672372
0.9	1.362190	0.729229	0.538919	0.734111	0.729229
1.0	1.437714	0.780322	0.483787	0.695548	0.780322
1.2	1.602789	0.867280	0.389266	0.623912	0.867280
1.4	1.783500	0.937341	0.314378	0.560694	0.937341
1.6	1.976842	0.994125	0.255891	0.505857	0.994125
1.8	2.180462	1.040559	0.210330	0.458618	1.040559
2.0	2.392528	1.078918	0.174697	0.417967	1.078918
2.2	2.611607	1.110940	0.146616	0.382905	1.110940
2.4	2.836571	1.137945	0.124243	0.352538	1.137946
2.6	3.066519	1.160945	0.106342	0.326102	1.160945
2.8	3.300733	1.180709	0.091786	0.302962	1.180709
3.0	3.538627	1.197835	0.079860	0.282595	1.197835
3.2	3.779723	1.212790	0.069997	0.264596	1.212790
3.4	4.023623	1.225942	0.061768	0.248532	1.225942
3.6	4.269999	1.237583	0.054845	0.234192	1.237584
3.8	4.518572	1.247951	0.048977	0.221308	1.247951
4.0	4.769107	1.257232	0.043966	0.209682	1.257232
4.2	5.021403	1.265584	0.039659	0.199147	1.265584
4.4	5.275288	1.273134	0.035934	0.189563	1.273135
4.6	5.530611	1.279989	0.032692	0.180811	1.279990
4.8	5.787243	1.286239	0.029857	0.172793	1.286239
5.0	6.045071	1.291956	0.027365	0.165424	1.291956
5.5	6.694244	1.304314	0.022314	0.149382	1.304314
6.0	7.349021	1.314478	0.018515	0.136072	1.314478
6.5	8.008445	1.322974	0.015592	0.124868	1.322975
7.0	8.671781	1.330174	0.013297	0.115316	1.330175
7.5	9.338450	1.336349	0.011467	0.107084	1.336350
8.0	10.007993	1.341700	0.009984	0.099920	1.341700
8.5	10.680038	1.346377	0.008767	0.093632	1.346378
9.0	11.354279	1.350500	0.007756	0.088072	1.350501
9.5	12.030462	1.354161	0.006909	0.083122	1.354162
10.0	12.708376	1.357431	0.006191	0.078688	1.357432
11.0	14.068700	1.363026	0.005052	0.071078	1.363026
12.0	15.434099	1.367631	0.004197	0.064791	1.367631
13.0	16.803713	1.371487	0.003541	0.059510	1.371487
14.0	18.176881	1.374761	0.003026	0.055014	1.374761
15.0	19.553083	1.377575	0.002615	0.051142	1.377575
16.0	20.931908	1.380017	0.002282	0.047773	1.380018
17.0	22.313020	1.382158	0.002008	0.044816	1.382159
18.0	23.696144	1.384050	0.001780	0.042200	1.384051
19.0	25.081052	1.385733	0.001589	0.039870	1.385733
20.0	26.467552	1.387239	0.001427	0.037782	1.387240
25.0	33.418983	1.392893	0.000895	0.029923	1.392893
30.0	40.393296	1.396598	0.000612	0.024756	1.396598
35.0	47.383165	1.399210	0.000445	0.021104	1.399210
40.0	54.384290	1.401151	0.000338	0.018387	1.401151
45.0	61.393940	1.402648	0.000265	0.016288	1.402648
50.0	68.410265	1.403838	0.000213	0.014617	1.403839
55.0	75.431961	1.404807	0.000175	0.013256	1.404808
60.0	82.458069	1.405610	0.000147	0.012127	1.405611
65.0	89.487867	1.406288	0.000124	0.011174	1.406289
70.0	96.520797	1.406868	0.000107	0.010360	1.406868
75.0	103.556418	1.407368	0.932E-04	0.009656	1.407368
80.0	110.594375	1.407804	0.817E-04	0.009042	1.407805
85.0	117.634381	1.408189	0.722E-04	0.008500	1.408189
90.0	124.676196	1.408529	0.643E-04	0.008020	1.408530
95.0	131.719622	1.408834	0.576E-04	0.007591	1.408834
100.0	138.764492	1.409107	0.519E-04	0.007206	1.409108
$+\infty$	$+\infty$	$\sqrt{2}$	0.0	0.0	$\sqrt{2}$

Table 7 $M=0; N=-3$

ξ	θ	θ'	θ^n	θ^{n+1}	θ'
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.004987	0.099503	0.985185	0.999099	0.099503
0.2	1.019803	0.196116	0.942866	0.961538	0.196116
0.3	1.044030	0.287347	0.878739	0.917431	0.287347
0.4	1.077032	0.371390	0.800410	0.862068	0.371390
0.5	1.118033	0.447213	0.715141	0.800000	0.447213
0.6	1.166190	0.514495	0.630509	0.735294	0.514495
0.7	1.220655	0.573462	0.549820	0.671140	0.573462
0.8	1.280624	0.624694	0.476139	0.609756	0.624694
0.9	1.345362	0.668964	0.410659	0.552486	0.668964
1.0	1.414213	0.707106	0.353553	0.500000	0.707106
1.2	1.562049	0.768221	0.262370	0.409836	0.768221
1.4	1.720464	0.813733	0.196364	0.337837	0.813733
1.6	1.886795	0.847998	0.148876	0.280898	0.847998
1.8	2.059125	0.874157	0.114538	0.235849	0.874157
2.0	2.236067	0.894427	0.089442	0.200000	0.894427
2.2	2.416608	0.910366	0.070856	0.171232	0.910366
2.4	2.599999	0.923076	0.056895	0.147929	0.923076
2.6	2.785677	0.933345	0.046260	0.128866	0.933345
2.8	2.973213	0.941741	0.038047	0.113122	0.941741
3.0	3.162277	0.948683	0.031622	0.100000	0.948683
3.2	3.352610	0.954479	0.026536	0.088968	0.954479
3.4	3.544008	0.959365	0.022465	0.079617	0.959365
3.6	3.736307	0.963517	0.019172	0.071633	0.963517
3.8	3.929375	0.967074	0.016482	0.064766	0.967074
4.0	4.123104	0.970142	0.014266	0.058823	0.970142
4.2	4.317405	0.972806	0.012426	0.053648	0.972806
4.4	4.512204	0.975132	0.010885	0.049115	0.975132
4.6	4.707439	0.977176	0.009586	0.045126	0.977176
4.8	4.903059	0.978980	0.008483	0.041597	0.978980
5.0	5.099018	0.980580	0.007542	0.038462	0.980580
5.5	5.590168	0.983869	0.005724	0.032000	0.983869
6.0	6.082761	0.986393	0.004443	0.027027	0.986393
6.5	6.576471	0.988371	0.003515	0.023121	0.988371
7.0	7.071066	0.989949	0.002828	0.020000	0.989949
7.5	7.566371	0.991227	0.002308	0.017467	0.991227
8.0	8.062255	0.992277	0.001908	0.015384	0.992277
8.5	8.558619	0.993150	0.001595	0.013651	0.993150
9.0	9.055383	0.993883	0.001346	0.012195	0.993883
9.5	9.552484	0.994505	0.001147	0.010958	0.994505
10.0	10.049873	0.995037	0.000985	0.009900	0.995037
11.0	11.045358	0.995893	0.000742	0.008196	0.995893
12.0	12.041591	0.996545	0.000572	0.006896	0.996545
13.0	13.038401	0.997054	0.000451	0.005882	0.997054
14.0	14.035665	0.997458	0.000361	0.005076	0.997458
15.0	15.033292	0.997785	0.000294	0.004424	0.997785
16.0	16.031215	0.998052	0.000242	0.000891	0.998052
17.0	17.029382	0.998274	0.000202	0.003448	0.998274
18.0	18.027752	0.998460	0.000170	0.003076	0.998460
19.0	19.026293	0.998617	0.000145	0.002762	0.998617
20.0	20.024979	0.998752	0.000124	0.002493	0.998752
25.0	25.019985	0.999200	0.638E-04	0.001597	0.999200
30.0	30.016654	0.999444	0.369E-04	0.001109	0.999444
35.0	35.014274	0.999592	0.232E-04	0.000815	0.999592
40.0	40.012488	0.999687	0.156E-04	0.000624	0.999687
45.0	45.011098	0.999753	0.109E-04	0.000493	0.999753
50.0	50.009986	0.999800	0.799E-05	0.000399	0.999800
55.0	55.009076	0.999834	0.600E-05	0.000330	0.999834
60.0	60.008318	0.999861	0.462E-05	0.000277	0.999861
65.0	65.007676	0.999881	0.364E-05	0.000236	0.999881
70.0	70.007125	0.999897	0.291E-05	0.000204	0.999897
75.0	75.006648	0.999911	0.236E-05	0.000177	0.999911
80.0	80.006230	0.999921	0.195E-05	0.000156	0.999921
85.0	85.005861	0.999930	0.162E-05	0.000138	0.999930
90.0	90.005533	0.999938	0.137E-05	0.000123	0.999938
95.0	95.005239	0.999944	0.116E-05	0.000110	0.999944
100.0	100.004975	0.999949	0.999E-06	0.000100	0.999949
$+\infty$	$+\infty$	1.0	0.0	0.0	1.0

Table 8 $M=0; N=-4$

ξ	θ	θ'	θ^n	θ^{n+1}	θ'
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.004983	0.099339	0.980312	0.985197	0.099339
0.2	1.019739	0.194861	0.924788	0.943043	0.194861
0.3	1.043721	0.283408	0.842676	0.879519	0.283408
0.4	1.076118	0.362901	0.745692	0.802453	0.362901
0.5	1.115968	0.432418	0.644750	0.719521	0.432418
0.6	1.162270	0.491995	0.547989	0.636911	0.491995
0.7	1.214058	0.542321	0.460299	0.558831	0.542321
0.8	1.270460	0.584431	0.383844	0.487659	0.584431
0.9	1.330709	0.619475	0.318908	0.424375	0.619475
1.0	1.394157	0.648571	0.264699	0.369032	0.648571
1.2	1.528567	0.692824	0.183172	0.279992	0.692824
1.4	1.670394	0.723621	0.128446	0.214557	0.723621
1.6	1.817418	0.745392	0.091660	0.166584	0.745392
1.8	1.968147	0.761065	0.066645	0.131167	0.761065
2.0	2.121567	0.772562	0.049359	0.104719	0.772562
2.2	2.276979	0.781149	0.037201	0.084707	0.781149
2.4	2.433890	0.787672	0.028496	0.069358	0.787672
2.6	2.591949	0.792705	0.022156	0.057427	0.792705
2.8	2.750899	0.796644	0.017462	0.048036	0.796644
3.0	2.910552	0.799767	0.013934	0.040557	0.799767
3.2	3.070765	0.802273	0.011246	0.034535	0.802273
3.4	3.231430	0.804306	0.009171	0.029635	0.804306
3.6	3.392463	0.805972	0.007549	0.025612	0.805972
3.8	3.553800	0.807349	0.006269	0.022280	0.807349
4.0	3.715388	0.808497	0.005247	0.019497	0.808497
4.2	3.877186	0.809461	0.004425	0.017157	0.809461
4.4	4.039162	0.810277	0.003756	0.015174	0.810277
4.6	4.201289	0.810972	0.003209	0.013485	0.810972
4.8	4.363545	0.811568	0.002758	0.012035	0.811568
5.0	4.525911	0.812081	0.002383	0.010786	0.812081
5.5	4.932217	0.813086	0.001689	0.008334	0.813086
6.0	5.338951	0.813809	0.001230	0.006571	0.813809
6.5	5.745995	0.814341	0.000917	0.005271	0.814341
7.0	6.153271	0.814742	0.000697	0.004292	0.814742
7.5	6.560722	0.815049	0.000539	0.003541	0.815049
8.0	7.049840	0.815330	0.000404	0.002854	0.815330
8.5	7.376003	0.815478	0.000337	0.002491	0.815478
9.0	7.783781	0.815630	0.000272	0.002120	0.815630
9.5	8.191628	0.815753	0.000222	0.001819	0.815753
10.0	8.599531	0.815854	0.000182	0.001572	0.815854
11.0	9.415466	0.816007	0.000127	0.001198	0.816007
12.0	10.231530	0.816115	0.912E-04	0.000933	0.816115
13.0	11.047687	0.816193	0.671E-04	0.000741	0.816193
14.0	11.863911	0.816252	0.504E-04	0.000598	0.816252
15.0	12.680186	0.816296	0.386E-04	0.000490	0.816296
16.0	13.496500	0.816330	0.301E-04	0.000406	0.816330
17.0	14.312844	0.816357	0.238E-04	0.000341	0.816357
18.0	15.129212	0.816378	0.190E-04	0.000288	0.816378
19.0	15.945600	0.816395	0.154E-04	0.000246	0.816395
20.0	16.762002	0.816409	0.126E-04	0.000212	0.816409
25.0	20.844170	0.816451	0.529E-05	0.000110	0.816451
30.0	24.926479	0.816470	0.259E-05	0.645E-04	0.816470
35.0	29.008856	0.816479	0.141E-05	0.409E-04	0.816479
40.0	33.091269	0.816485	0.833E-06	0.275E-04	0.816485
45.0	37.173704	0.816488	0.523E-06	0.194E-04	0.816488
50.0	41.256152	0.816490	0.345E-06	0.142E-04	0.816490
55.0	45.338608	0.816492	0.236E-06	0.107E-04	0.816492
60.0	49.421071	0.816493	0.167E-06	0.828E-05	0.816493
65.0	53.503538	0.816493	0.122E-06	0.652E-05	0.816493
70.0	57.586008	0.816494	0.909E-07	0.523E-05	0.816494
75.0	61.668481	0.816494	0.691E-07	0.426E-05	0.816494
80.0	65.750955	0.816495	0.535E-07	0.351E-05	0.816495
85.0	69.833430	0.816495	0.420E-07	0.293E-05	0.816495
90.0	73.915907	0.816495	0.335E-07	0.247E-05	0.816495
95.0	77.998384	0.816495	0.270E-07	0.210E-05	0.816495
100.0	82.080862	0.816495	0.220E-07	0.180E-05	0.816495
$+\infty$	$+\infty$	$\sqrt{\frac{2}{3}}$	0.0	0.0	$\sqrt{\frac{2}{3}}$

Table 9 $M=0; N=-5$

ξ	θ	θ'	θ^n	θ^{n+1}	θ'
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.004979	0.099176	0.975471	0.980328	0.099176
0.2	1.019676	0.193625	0.907168	0.925018	0.193625
0.3	1.043420	0.279596	0.808544	0.843651	0.279596
0.4	1.075237	0.354866	0.695790	0.748139	0.354866
0.5	1.114012	0.418753	0.582840	0.649291	0.418753
0.6	1.158623	0.471741	0.478947	0.554919	0.471741
0.7	1.208036	0.515000	0.388687	0.469548	0.515000
0.8	1.261347	0.549973	0.313202	0.395057	0.549973
0.9	1.317803	0.578105	0.251621	0.331587	0.578105
1.0	1.376784	0.600701	0.202148	0.278314	0.600701
1.2	1.500441	0.633522	0.131493	0.197298	0.633522
1.4	1.629445	0.655036	0.087056	0.141853	0.655036
1.6	1.761984	0.669421	0.058882	0.103750	0.669421
1.8	1.896912	0.679251	0.040715	0.077234	0.679251
2.0	2.033488	0.686118	0.028760	0.058483	0.686118
2.2	2.171228	0.691015	0.020723	0.044996	0.691015
2.4	2.309806	0.694574	0.015209	0.035131	0.694574
2.6	2.448997	0.697208	0.011351	0.027800	0.697208
2.8	2.588646	0.699189	0.008602	0.022269	0.699189
3.0	2.728641	0.700699	0.006611	0.018039	0.700699
3.2	2.868903	0.701868	0.005145	0.014761	0.701868
3.4	3.009372	0.702782	0.004051	0.012192	0.702782
3.6	3.150003	0.703506	0.003224	0.010156	0.703506
3.8	3.290765	0.704085	0.002591	0.008527	0.704085
4.0	3.431630	0.704552	0.002101	0.007211	0.704552
4.2	3.572580	0.704933	0.001718	0.006138	0.704933
4.4	3.713599	0.705245	0.001415	0.005257	0.705245
4.6	3.854674	0.705503	0.001175	0.004529	0.705503
4.8	3.995797	0.705718	0.000981	0.003922	0.705718
5.0	4.136959	0.705898	0.000825	0.003414	0.705898
5.5	4.489999	0.706236	0.000547	0.002460	0.706236
6.0	4.843177	0.706463	0.000375	0.001817	0.706463
6.5	5.196451	0.706621	0.000263	0.001371	0.706621
7.0	5.549791	0.706733	0.000189	0.001054	0.706733
7.5	5.903180	0.706815	0.000139	0.000823	0.706815
8.0	6.256603	0.706876	0.000104	0.000652	0.706876
8.5	6.610053	0.706921	0.792E-04	0.000523	0.706921
9.0	6.963523	0.706956	0.610E-04	0.000425	0.706956
9.5	7.317008	0.706983	0.476E-04	0.000348	0.706983
10.0	7.670505	0.707004	0.376E-04	0.000288	0.707004
11.0	8.377526	0.707035	0.242E-04	0.000203	0.707035
12.0	9.084572	0.707054	0.161E-04	0.000146	0.707054
13.0	9.791633	0.707068	0.111E-04	0.000108	0.707068
14.0	10.498707	0.707077	0.784E-05	0.823E-04	0.707077
15.0	11.205788	0.707084	0.565E-05	0.634E-04	0.707084
16.0	11.912874	0.707089	0.416E-05	0.496E-04	0.707089
17.0	12.619965	0.707092	0.312E-05	0.394E-04	0.707092
18.0	13.327059	0.707095	0.237E-05	0.317E-04	0.707095
19.0	14.034156	0.707097	0.183E-05	0.257E-04	0.707097
20.0	14.741254	0.707099	0.143E-05	0.211E-04	0.707099
25.0	18.276763	0.707103	0.490E-06	0.896E-05	0.707103
30.0	21.812285	0.707105	0.202E-06	0.441E-05	0.707105
35.0	25.347812	0.707105	0.955E-07	0.242E-05	0.707105
40.0	28.883342	0.707106	0.497E-07	0.143E-05	0.707106
45.0	32.418873	0.707106	0.279E-07	0.905E-06	0.707106
50.0	35.954405	0.707106	0.166E-07	0.598E-06	0.707106
55.0	39.489937	0.707106	0.104E-07	0.411E-06	0.707106
60.0	43.025470	0.707106	0.678E-08	0.291E-06	0.707106
65.0	46.561002	0.707106	0.456E-08	0.212E-06	0.707106
70.0	50.096535	0.707106	0.316E-08	0.158E-06	0.707106
75.0	53.632068	0.707106	0.225E-08	0.120E-06	0.707106
80.0	57.167601	0.707106	0.163E-08	0.936E-07	0.707106
85.0	60.703134	0.707106	0.121E-08	0.736E-07	0.707106
90.0	64.238667	0.707106	0.914E-09	0.587E-07	0.707106
95.0	67.774200	0.707106	0.699E-09	0.473E-07	0.707106
100.0	71.309733	0.707106	0.542E-09	0.386E-07	0.707106
$+\infty$	$+\infty$	$\frac{\sqrt{2}}{2}$	0.0	0.0	$\frac{\sqrt{2}}{2}$

Table 10 $M=0; N=-10$

ξ	θ	θ'	θ^n	θ^{n+1}	θ'
0.0	1.000000	0.0	1.00000	1.00000	0.0
0.1	1.004958	0.098368	0.95173	0.95645	0.098368
0.2	1.019369	0.187718	0.82543	0.84142	0.187718
0.3	1.042003	0.262246	0.66268	0.69052	0.262246
0.4	1.071267	0.320358	0.52236	0.53816	0.320358
0.5	1.105576	0.363553	0.36653	0.40522	0.363553
0.6	1.143576	0.394698	0.26142	0.29895	0.394698
0.7	1.184214	0.416776	0.18437	0.21833	0.416776
0.8	1.226714	0.432314	0.12958	0.15896	0.432314
0.9	1.270524	0.443240	0.09123	0.11591	0.443214
1.0	1.315256	0.450949	0.06455	0.08489	0.450949
1.2	1.406488	0.460331	0.03300	0.04642	0.460331
1.4	1.499092	0.465199	0.01744	0.02615	0.465199
1.6	1.592420	0.467811	0.00953	0.01518	0.467811
1.8	1.686140	0.469260	0.00538	0.00907	0.469260
2.0	1.780083	0.470089	0.00313	0.00557	0.470089
2.2	1.874154	0.470577	0.00187	0.00350	0.470577
2.4	1.968301	0.470872	0.00114	0.00225	0.470872
2.6	2.062495	0.471055	0.717E-03	0.00148	0.471055
2.8	2.156719	0.471170	0.459E-03	0.990E-03	0.471170
3.0	2.250961	0.471245	0.299E-03	0.674E-03	0.471245
3.2	2.345215	0.471294	0.198E-03	0.465E-03	0.471294
3.4	2.439478	0.471327	0.133E-03	0.326E-03	0.471327
3.6	2.533745	0.471349	0.917E-04	0.232E-03	0.471349
3.8	2.628017	0.471365	0.636E-04	0.167E-03	0.471365
4.0	2.722291	0.471375	0.447E-04	0.121E-03	0.471375
4.2	2.816567	0.471383	0.318E-04	0.896E-04	0.471383
4.4	2.910844	0.471388	0.228E-04	0.666E-04	0.471388
4.6	3.005122	0.471392	0.166E-04	0.500E-04	0.471392
4.8	3.099401	0.471395	0.122E-04	0.378E-04	0.471395
5.0	3.193681	0.471397	0.905E-05	0.289E-04	0.471397
5.5	3.429380	0.471400	0.444E-05	0.152E-04	0.471400
6.0	3.665081	0.471402	0.228E-05	0.838E-05	0.471402
6.5	3.900783	0.471403	0.122E-05	0.478E-05	0.471403
7.0	4.136484	0.471403	0.681E-06	0.282E-05	0.471403
7.5	4.372186	0.471404	0.391E-06	0.171E-05	0.471404
8.0	4.607888	0.471404	0.231E-06	0.106E-05	0.471404
8.5	4.843590	0.471404	0.140E-06	0.681E-06	0.471404
9.0	5.079293	0.471404	0.874E-07	0.444E-06	0.471404
9.5	5.314995	0.471404	0.555E-07	0.295E-06	0.471404
10.0	5.550697	0.471404	0.360E-07	0.199E-06	0.471404
11.0	6.022101	0.471404	0.159E-07	0.959E-07	0.471404
12.0	6.493506	0.471404	0.750E-08	0.487E-07	0.471404
13.0	6.964910	0.471404	0.372E-08	0.259E-07	0.471404
14.0	7.436315	0.471404	0.193E-08	0.143E-07	0.471404
15.0	7.907719	0.471404	0.104E-08	0.827E-08	0.471404
16.0	8.379123	0.471404	0.586E-09	0.491E-08	0.471404
17.0	8.850528	0.471404	0.339E-09	0.300E-08	0.471404
18.0	9.321937	0.471404	0.201E-09	0.188E-08	0.471404
19.0	9.793337	0.471404	0.123E-09	0.120E-08	0.471404
20.0	10.264741	0.471404	0.770E-10	0.790E-09	0.471404
25.0	12.621763	0.471404	0.974E-11	0.123E-09	0.471404
30.0	14.978785	0.471404	0.175E-11	0.263E-10	0.471404
35.0	17.335807	0.471404	0.407E-12	0.707E-11	0.471404
40.0	19.692829	0.471404	0.114E-12	0.224E-11	0.471404
45.0	22.049851	0.471404	0.368E-13	0.811E-12	0.471404
50.0	24.406873	0.471404	0.133E-13	0.325E-12	0.471404
55.0	26.763895	0.471404	0.530E-14	0.141E-12	0.471404
60.0	29.120917	0.471404	0.228E-14	0.663E-13	0.471404
65.0	31.477940	0.471404	0.104E-14	0.329E-13	0.471404
70.0	33.834962	0.471404	0.508E-15	0.172E-13	0.471404
75.0	36.191884	0.471404	0.259E-15	0.938E-14	0.471404
80.0	38.549006	0.471404	0.137E-15	0.531E-14	0.471404
85.0	40.906028	0.471404	0.762E-16	0.311E-14	0.471404
90.0	43.263050	0.471404	0.435E-16	0.188E-14	0.471404
95.0	45.620072	0.471404	0.256E-16	0.116E-14	0.471404
100.0	47.977094	0.471404	0.154E-16	0.742E-15	0.471404
$+\infty$	$+\infty$	$\frac{\sqrt{2}}{3}$	0.0	0.0	$\frac{\sqrt{2}}{3}$

Table 11 $M=1$; $N=-0.2$

ξ	θ	θ'	θ^n	θ^{n+1}	$-\xi\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.050	0.999374	-0.025001	1.000125	0.999499	0.001250
0.100	0.997499	-0.050012	1.000500	0.997999	0.005001
0.150	0.994373	-0.075042	1.001128	0.995496	0.011256
0.200	0.989994	-0.100100	1.002012	0.991987	0.020020
0.250	0.984362	-0.125196	1.003157	0.987470	0.031299
0.300	0.977474	-0.150340	1.004566	0.981938	0.045102
0.350	0.969327	-0.175543	1.006249	0.975385	0.061440
0.400	0.959919	-0.200814	1.008214	0.967804	0.080325
0.450	0.949244	-0.226164	1.010471	0.959185	0.101774
0.500	0.937301	-0.251606	1.013034	0.949518	0.125803
0.550	0.924082	-0.277151	1.015916	0.938790	0.152433
0.600	0.909558	-0.302813	1.019139	0.926967	0.181687
0.650	0.893799	-0.328600	1.022708	0.914096	0.213590
0.700	0.876695	-0.354536	1.026668	0.900075	0.248175
0.750	0.858343	-0.380624	1.031020	0.884970	0.285468
0.800	0.838629	-0.406894	1.035824	0.868672	0.325515
0.850	0.817651	-0.433351	1.041084	0.851244	0.368348
0.900	0.795290	-0.460028	1.046875	0.832569	0.414025
0.950	0.771644	-0.486931	1.053212	0.812706	0.462585
1.000	0.746592	-0.514103	1.060188	0.791528	0.514103
1.050	0.720230	-0.541549	1.067838	0.769089	0.568626
1.100	0.692459	-0.569316	1.076268	0.745273	0.626247
1.150	0.663292	-0.597432	1.085571	0.720052	0.687047
1.200	0.632710	-0.625936	1.095869	0.693368	0.751123
1.250	0.600691	-0.654874	1.107310	0.665152	0.818592
1.300	0.567214	-0.684296	1.120083	0.635328	0.889595
1.350	0.532253	-0.714266	1.134425	0.603802	0.964259
1.400	0.495777	-0.744857	1.150647	0.570465	1.042800
1.450	0.457755	-0.776160	1.16914	0.53518	1.125431
1.500	0.418148	-0.808287	1.19051	0.49781	1.212429
1.550	0.376910	-0.841379	1.21548	0.45813	1.304137
1.600	0.333990	-0.875624	1.24523	0.41589	1.400998
1.650	0.289324	-0.911275	1.28150	0.37077	1.503604
1.700	0.242834	-0.948690	1.32720	0.32229	1.612774
1.750	0.194417	-0.988416	1.38756	0.26976	1.729727
1.800	0.143939	-1.031362	1.47353	0.21210	1.856450
1.850	0.091199	-1.079314	1.61436	0.14722	1.996733
1.860	0.080353	-1.089813	1.65576	0.13304	2.027054
1.870	0.069401	-1.100738	1.70500	0.11832	2.058378
1.880	0.058337	-1.112177	1.76526	0.10298	2.090893
1.890	0.047155	-1.124265	1.84201	0.08686	2.124860
1.900	0.035849	-1.137208	1.94582	0.06975	2.160694
1.910	0.024407	-1.151376	2.1012	0.05128	2.199128
1.920	0.012814	-1.167592	2.3903	0.03063	2.241778
1.925	0.006953	-1.177177	2.7012	0.01878	2.266067
1.926	0.005778	-1.179316	2.8033	0.01618	2.271361
1.927	0.004592	-1.181575	2.9348	0.01347	2.276895
1.928	0.003412	-1.183975	3.1144	0.01062	2.282704
1.929	0.002227	-1.186602	3.391	0.00755	2.288955
1.930	0.001038	-1.189614	3.950	0.00410	2.295956
1.930871	0.0	-1.193383	$+\infty$	0.0	2.304270

Table 12 $M=1$; $N=-0.5$

ξ	θ	θ'	θ^n	θ^{n+1}	$-\xi\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.050	0.999374	-0.025003	1.000312	0.999687	0.001250
0.100	0.997499	-0.050031	1.001251	0.998748	0.005003
0.150	0.994371	-0.075105	1.002826	0.997181	0.011265
0.200	0.989987	-0.100251	1.005044	0.994981	0.020050
0.250	0.984344	-0.125492	1.007920	0.992141	0.031373
0.300	0.977436	-0.150855	1.011476	0.988653	0.045256
0.350	0.969256	-0.176364	1.015735	0.984508	0.061727
0.400	0.959796	-0.202048	1.020727	0.979692	0.080819
0.450	0.949048	-0.227935	1.026491	0.974991	0.102570
0.500	0.936999	-0.254055	1.033071	0.967987	0.127027
0.550	0.923638	-0.280442	1.040516	0.961060	0.154243
0.600	0.908950	-0.307129	1.048889	0.953388	0.184277
0.650	0.892919	-0.334155	1.058263	0.944944	0.217201
0.700	0.875528	-0.361561	1.068722	0.935696	0.253093
0.750	0.856756	-0.389392	1.080366	0.925611	0.292044
0.800	0.836581	-0.417696	1.093315	0.914648	0.334157
0.850	0.814977	-0.446531	1.107712	0.902761	0.379551
0.900	0.791918	-0.475957	1.123724	0.889897	0.428361
0.950	0.767371	-0.506044	1.141556	0.875997	0.480742
1.000	0.741301	-0.536873	1.161454	0.860988	0.536873
1.050	0.713669	-0.568535	1.183725	0.844789	0.596962
1.100	0.684432	-0.601138	1.208744	0.827304	0.661251
1.150	0.653538	-0.634806	1.236984	0.808417	0.730027
1.200	0.620931	-0.669690	1.269048	0.787991	0.803628
1.250	0.586546	-0.705969	1.305716	0.765862	0.882462
1.300	0.550307	-0.743866	1.348022	0.741827	0.967025
1.350	0.512127	-0.783654	1.397367	0.751631	1.057933
1.400	0.471904	-0.825686	1.45570	0.68695	1.155960
1.450	0.429514	-0.870422	1.52584	0.65537	1.262113
1.500	0.384807	-0.918483	1.61204	0.62032	1.377725
1.550	0.337596	-0.970741	1.72108	0.58103	1.504648
1.600	0.287641	-1.028488	1.86453	0.53632	1.645581
1.650	0.234622	-1.093784	2.06450	0.48437	1.804745
1.700	0.178078	-1.170275	2.36969	0.42199	1.989468
1.750	0.117285	-1.265670	2.91995	0.34247	2.214923
1.760	0.104516	-1.288432	3.0931	0.32329	2.267641
1.770	0.091511	-1.313020	3.3055	0.30250	2.324044
1.780	0.078248	-1.339893	3.5748	0.27972	2.385011
1.790	0.064703	-1.369744	3.9312	0.25436	2.451843
1.800	0.050840	-1.403691	4.4349	0.22547	2.526645
1.810	0.036609	-1.443771	5.2263	0.19133	2.613228
1.820	0.021929	-1.494564	6.7527	0.14808	2.720107
1.830	0.006633	-1.573102	12.241	0.08144	2.878776
1.831	0.005053	-1.585355	14.066	0.07108	2.902764
1.832	0.003460	-1.599878	17.000	0.05882	2.930978
1.833	0.001852	-1.618625	23.22	0.04303	2.966939
1.834	0.000220	-1.652233	67.39	0.01480	3.030196
1.834132	0.0	-1.699971	$+\infty$	0.0	3.062949

Table 13 $M=1$; $N=-0.8$

ξ	θ	θ'	θ^n	θ^{n+1}	$-\xi\,\theta'$
0.0	1.000000	0.0	1.00000	1.000000	0.0
0.050	0.999374	-0.025006	1.00050	0.999874	0.001250
0.100	0.997498	-0.050050	1.00200	0.999499	0.005005
0.150	0.994368	-0.075168	1.00451	0.998871	0.011275
0.200	0.989979	-0.100402	1.00808	0.997987	0.020080
0.250	0.984325	-0.125790	1.01271	0.996845	0.031447
0.300	0.977397	-0.151372	1.01845	0.995438	0.045411
0.350	0.969184	-0.177193	1.02535	0.993759	0.062017
0.400	0.959673	-0.203297	1.03346	0.991801	0.081318
0.450	0.948849	-0.229733	1.04289	0.989553	0.103380
0.500	0.936693	-0.256553	1.05371	0.987005	0.128276
0.550	0.923186	-0.283813	1.06601	0.984142	0.156096
0.600	0.908304	-0.311575	1.07996	0.980948	0.186944
0.650	0.892019	-0.339905	1.09571	0.977405	0.220938
0.700	0.874302	-0.368880	1.11344	0.973491	0.258216
0.750	0.855119	-0.398583	1.13338	0.969182	0.298937
0.800	0.834430	-0.429108	1.15580	0.964446	0.343286
0.850	0.812193	-0.460564	1.18106	0.959250	0.391479
0.900	0.788356	-0.493074	1.20953	0.953552	0.443767
0.950	0.762865	-0.526784	1.24177	0.947304	0.500445
1.000	0.735655	-0.561862	1.27837	0.940448	0.561862
1.050	0.706653	-0.598509	1.32018	0.932913	0.628434
1.100	0.675774	-0.636968	1.36821	0.924613	0.700665
1.150	0.642921	-0.677935	1.42388	0.915443	0.779165
1.200	0.607979	-0.720577	1.48897	0.905269	0.864692
1.250	0.570814	-0.766559	1.56603	0.893920	0.958199
1.300	0.531264	-0.816085	1.65862	0.881175	1.060910
1.350	0.489134	-0.869956	1.7718	0.866733	1.174439
1.400	0.444178	-0.929273	1.9140	0.850181	1.300982
1.450	0.396050	-0.995616	2.0977	0.830919	1.443643
1.500	0.344461	-1.071370	2.3456	0.808031	1.607057
1.550	0.288732	-1.160425	2.7014	0.780008	1.798660
1.600	0.228083	-1.269819	3.2623	0.744078	2.031712
1.650	0.161171	-1.414706	4.3068	0.694156	2.334266
1.700	0.085325	-1.641026	7.1636	0.611245	2.789745
1.710	0.068585	-1.709189	8.5311	0.585122	2.922714
1.720	0.051085	-1.794543	10.797	0.551644	3.086615
1.730	0.032551	-1.911796	15.46	0.50422	3.307405
1.740	0.012580	-2.117281	33.12	0.41680	3.684068
1.741	0.010444	-2.151703	38.44	0.40158	3.746116
1.742	0.008273	-2.192558	46.32	0.38329	3.819436
1.743	0.006056	-2.243533	59.45	0.36011	3.910479
1.744	0.003780	-2.313321	86.68	0.32771	4.034432
1.745	0.001415	-2.435103	190.19	0.26920	4.249255
1.745560	0.0	-2.935681	$+\infty$	0.0	5.124409

Table 14 $M=1$; $N=-1.2$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.002498	0.049925	0.997010	0.999501	0.004992
0.2	1.009970	0.099405	0.988165	0.998017	0.019881
0.3	1.022350	0.148016	0.973823	0.995588	0.044404
0.4	1.039531	0.195371	0.954541	0.992275	0.078148
0.5	1.061371	0.241137	0.931020	0.988158	0.120568
0.6	1.087696	0.285040	0.904046	0.983328	0.171024
0.7	1.118310	0.326874	0.874430	0.977884	0.228812
0.8	1.152998	0.366496	0.842957	0.971928	0.293197
0.9	1.191533	0.403823	0.810349	0.965558	0.363441
1.0	1.233685	0.438826	0.777239	0.958868	0.438826
1.2	1.327913	0.501948	0.711535	0.944856	0.602338
1.4	1.433883	0.556355	0.648908	0.930459	0.778897
1.6	1.549928	0.602854	0.591052	0.916089	0.964567
1.8	1.674559	0.642381	0.538665	0.902027	1.156286
2.0	1.806478	0.675874	0.491813	0.888450	1.351748
2.2	1.944566	0.704208	0.450207	0.875458	1.549258
2.4	2.087870	0.728161	0.413386	0.863096	1.747588
2.6	2.235584	0.748410	0.380829	0.851376	1.945867
2.8	2.387025	0.765530	0.352023	0.840288	2.143484
3.0	2.541619	0.780006	0.326488	0.829808	2.340019
3.2	2.698879	0.792248	0.303794	0.819904	2.535195
3.4	2.858393	0.702597	0.283565	0.810542	2.728830
3.6	3.019811	0.811338	0.265475	0.801685	2.920818
3.8	3.182837	0.818711	0.249242	0.793299	3.111103
4.0	3.347218	0.824916	0.234627	0.785349	3.299666
4.2	3.512737	0.830122	0.221424	0.777805	3.486513
4.4	3.679210	0.834470	0.209456	0.770635	3.671669
4.6	3.846475	0.838080	0.198574	0.763813	3.855170
4.8	4.014399	0.841054	0.188649	0.757313	4.037062
5.0	4.182861	0.843478	0.179569	0.751113	4.217394
5.5	4.605733	0.847590	0.159971	0.736784	4.66174
6.0	5.030100	0.849585	0.143915	0.723910	5.09751
6.5	5.455069	0.850076	0.130568	0.712262	5.52549
7.0	5.879998	0.849492	0.119329	0.701656	5.94644
7.5	6.304432	0.848135	0.109755	0.691943	6.36101
8.0	6.728041	0.846223	0.101515	0.683002	6.76979
8.5	7.150591	0.843917	0.094360	0.674732	7.17330
9.0	7.571913	0.841333	0.088095	0.667050	7.57199
9.5	7.991892	0.838556	0.082569	0.659887	7.96628
10.0	8.410448	0.835652	0.077663	0.653184	8.35652
11.0	9.243109	0.829642	0.069345	0.640968	9.12606
12.0	10.069710	0.823562	0.062571	0.630081	9.88275
13.0	10.890262	0.817561	0.056957	0.620286	10.62829
14.0	11.704886	0.811719	0.052234	0.611401	11.36407
15.0	12.513768	0.806080	0.048209	0.603284	12.09120
16.0	13.317122	0.800665	0.044741	0.595823	12.81064
17.0	14.115176	0.795480	0.041723	0.588928	13.52316
18.0	14.908159	0.790524	0.039074	0.582525	14.22943
19.0	15.696299	0.785790	0.036731	0.576554	14.93001
20.0	16.479811	0.781269	0.034646	0.570965	15.62539
25.0	20.334890	0.761494	0.026922	0.547459	19.03735
30.0	24.101035	0.745499	0.021956	0.529167	22.36498
35.0	27.794485	0.732275	0.018503	0.514290	25.62965
40.0	31.427223	0.721117	0.015967	0.501809	28.84469
45.0	35.008278	0.711523	0.014027	0.491095	32.01905
50.0	38.544614	0.703181	0.012498	0.481733	35.1590
55.0	42.041723	0.695808	0.011261	0.473438	38.2694
60.0	45.504018	0.689229	0.010240	0.466004	41.3537
65.0	48.935108	0.683305	0.009385	0.459278	44.4148
70.0	52.337984	0.677928	0.008658	0.453144	47.4550
75.0	55.715163	0.673014	0.008032	0.447512	50.4760
80.0	59.068783	0.668494	0.007488	0.442311	53.4795
85.0	62.400680	0.664316	0.007010	0.437483	56.4669
90.0	65.712445	0.660435	0.006589	0.432982	59.4391
95.0	69.005468	0.656814	0.006213	0.428768	62.3973
100.0	72.280973	0.653423	0.005877	0.424810	65.3423
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 15 $M=1; N=-1.5$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.002497	0.049906	0.996265	0.998753	0.004990
0.2	1.009962	0.099258	0.985239	0.995055	0.019851
0.3	1.022313	0.147528	0.967440	0.989026	0.044258
0.4	1.039416	0.194247	0.943659	0.980855	0.077699
0.5	1.061097	0.239018	0.914885	0.970783	0.119509
0.6	1.087144	0.281528	0.882203	0.959083	0.168917
0.7	1.117320	0.321556	0.846707	0.946043	0.225089
0.8	1.151368	0.358964	0.809428	0.931950	0.287171
0.9	1.189024	0.393692	0.771283	0.917074	0.354323
1.0	1.230018	0.425745	0.733048	0.904662	0.425745
1.2	1.320969	0.482092	0.658658	0.870068	0.578510
1.4	1.422216	0.528867	0.589591	0.838527	0.740415
1.6	1.531956	0.567234	0.527388	0.807935	0.907574
1.8	1.648631	0.598418	0.472405	0.778822	1.077153
2.0	1.770922	0.623581	0.424326	0.751450	1.247162
2.2	1.897731	0.643751	0.382514	0.725909	1.416253
2.4	2.028149	0.659810	0.346218	0.702182	1.583544
2.6	2.161430	0.672493	0.314693	0.680188	1.748843
2.8	2.296962	0.682410	0.287255	0.659816	1.910748
3.0	2.434243	0.690058	0.263301	0.640940	2.070175
3.2	2.572862	0.695845	0.242312	0.623435	2.226704
3.4	2.712480	0.700102	0.223846	0.607178	2.380347
3.6	2.852819	0.703100	0.207533	0.592056	2.531160
3.8	2.993651	0.705060	0.193062	0.577962	2.679227
4.0	3.134786	0.706162	0.180172	0.564801	2.824651
4.2	3.276069	0.706557	0.168643	0.552488	2.967541
4.4	3.417370	0.706366	0.158293	0.540946	3.108011
4.6	3.558583	0.705690	0.148965	0.530104	3.246174
4.8	3.699619	0.704613	0.140528	0.519901	3.382903
5.0	3.840406	0.703204	0.132872	0.510283	3.51602
5.5	4.190911	0.698592	0.116556	0.488478	3.84225
6.0	4.538823	0.692923	0.103415	0.469384	4.15754
6.5	4.883732	0.686636	0.092655	0.452505	4.46313
7.0	5.225406	0.680019	0.083718	0.437461	4.76013
7.5	5.563728	0.673260	0.076199	0.423952	5.04945
8.0	5.898663	0.666484	0.069802	0.411740	5.33187
8.5	6.230224	0.659773	0.064304	0.400634	5.60807
9.0	6.558457	0.653182	0.059538	0.390480	5.87864
9.5	6.883432	0.646745	0.055372	0.381151	6.14407
10.0	7.205231	0.640481	0.051704	0.372542	6.40481
11.0	7.839667	0.628517	0.045556	0.357150	6.91369
12.0	8.462921	0.617317	0.040620	0.343755	7.40781
13.0	9.074550	0.606860	0.036581	0.331961	7.88918
14.0	9.676475	0.597100	0.033221	0.321470	8.35941
15.0	10.268967	0.587986	0.030388	0.312058	8.81979
16.0	10.852644	0.579462	0.027970	0.303951	9.27139
17.0	11.428071	0.571477	0.025884	0.295810	9.71511
18.0	11.995762	0.563983	0.024069	0.288726	10.15169
19.0	12.556186	0.556936	0.022475	0.282209	10.58179
20.0	13.109771	0.550297	0.021067	0.276186	11.00594
25.0	15.787616	0.522090	0.015941	0.251675	13.05226
30.0	18.340880	0.500049	0.012731	0.233501	15.00149
35.0	20.795098	0.482223	0.010545	0.219290	16.87781
40.0	23.168112	0.467410	0.008967	0.207756	18.69641
45.0	25.472918	0.454835	0.007778	0.198134	20.46759
50.0	27.719315	0.443974	0.006852	0.189936	22.1987
55.0	29.914899	0.434459	0.006111	0.182833	23.8952
60.0	32.065703	0.426024	0.005507	0.176595	25.5614
65.0	34.176608	0.418471	0.005005	0.171054	27.2006
70.0	36.251634	0.411650	0.004581	0.166087	28.8155
75.0	38.294137	0.405444	0.004219	0.161597	30.4083
80.0	40.306955	0.399762	0.003907	0.157510	31.9810
85.0	42.292513	0.394530	0.003635	0.153768	33.5350
90.0	44.252908	0.389687	0.003396	0.150324	35.0719
95.0	46.189960	0.385186	0.003185	0.147138	36.5926
100.0	48.105269	0.380984	0.002997	0.144179	38.0984
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 16 $M=1; N=-2$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.002496	0.049875	0.995024	0.997509	0.004987
0.2	1.009950	0.099013	0.980392	0.990147	0.019802
0.3	1.022251	0.146722	0.956938	0.978232	0.044016
0.4	1.039227	0.192402	0.925931	0.962253	0.076961
0.5	1.060648	0.235567	0.888908	0.942819	0.117783
0.6	1.086244	0.275861	0.847509	0.920602	0.165516
0.7	1.115717	0.313061	0.803325	0.896284	0.219143
0.8	1.148750	0.347064	0.757789	0.870511	0.277651
0.9	1.185023	0.377868	0.712108	0.843865	0.340081
1.0	1.224220	0.405553	0.667238	0.816846	0.405553
1.2	1.310178	0.452167	0.582557	0.763254	0.542600
1.4	1.404395	0.488413	0.507015	0.712050	0.683778
1.6	1.504966	0.515993	0.441515	0.664466	0.825590
1.8	1.610324	0.536533	0.385632	0.620993	0.965759
2.0	1.719205	0.551451	0.338333	0.581664	1.102902
2.2	1.830609	0.561930	0.298406	0.546266	1.236247
2.4	1.943746	0.568928	0.264679	0.514470	1.365428
2.6	2.057999	0.573205	0.236107	0.485908	1.490335
2.8	2.172887	0.575362	0.211799	0.460217	1.611015
3.0	2.288034	0.575869	0.191018	0.437056	1.727608
3.2	2.403150	0.575095	0.173156	0.416120	1.840305
3.4	2.518007	0.573330	0.157719	0.397139	1.949322
3.6	2.632431	0.570799	0.144306	0.379876	2.054878
3.8	2.746287	0.567683	0.132589	0.364127	2.157195
4.0	2.859474	0.564120	0.122300	0.349714	2.256482
4.2	2.971913	0.560223	0.113221	0.336483	2.352940
4.4	3.083547	0.556080	0.105171	0.324301	2.446754
4.6	3.194334	0.551760	0.098002	0.313054	2.538097
4.8	3.304243	0.547318	0.091591	0.302641	2.627130
5.0	3.413256	0.542800	0.085834	0.292975	2.71400
5.5	3.681803	0.531377	0.073769	0.271606	2.92257
6.0	3.944650	0.520047	0.064266	0.253507	3.12028
6.5	4.201901	0.509018	0.056638	0.237987	3.30861
7.0	4.453737	0.498399	0.050413	0.224530	3.48879
7.5	4.700378	0.488242	0.045262	0.212748	3.66181
8.0	4.942060	0.478564	0.040943	0.202344	3.82851
8.5	5.179022	0.469362	0.037282	0.193086	3.98957
9.0	5.411499	0.460621	0.034147	0.184791	4.14559
9.5	5.639717	0.452322	0.031440	0.177313	4.29706
10.0	5.863891	0.444440	0.029082	0.170535	4.44440
11.0	6.300905	0.429832	0.025188	0.158707	4.72815
12.0	6.724015	0.416603	0.022117	0.148720	4.99924
13.0	7.134513	0.404579	0.019645	0.140163	5.25952
14.0	7.533523	0.393604	0.017619	0.132740	5.51046
15.0	7.922028	0.383548	0.015934	0.126230	5.75323
16.0	8.300889	0.374298	0.014512	0.120469	5.98877
17.0	8.670862	0.365757	0.013300	0.115328	6.21788
18.0	9.032614	0.357844	0.012256	0.110709	6.44120
19.0	9.386737	0.350489	0.011349	0.106533	6.65929
20.0	9.733758	0.343631	0.010554	0.102735	6.87262
25.0	11.377258	0.315214	0.007725	0.087894	7.88035
30.0	12.857377	0.293749	0.006011	0.077535	8.81247
35.0	14.222266	0.276826	0.004875	0.069821	9.68891
40.0	15.470855	0.263050	0.004072	0.063812	10.52201
45.0	16.956555	0.251555	0.003477	0.058974	11.32000
50.0	18.189259	0.241774	0.003022	0.054977	12.0887
55.0	19.376504	0.233318	0.002663	0.051608	12.8325
60.0	20.524186	0.225910	0.002373	0.048723	13.5546
65.0	21.637014	0.219348	0.002136	0.046217	14.2576
70.0	22.718824	0.213480	0.001937	0.044016	14.9436
75.0	23.772784	0.208191	0.001769	0.042064	15.6143
80.0	24.801550	0.203389	0.001625	0.040320	16.2711
85.0	25.807372	0.199003	0.001501	0.038748	16.9152
90.0	26.792179	0.194974	0.001393	0.037337	17.5414
95.0	25.757636	0.191256	0.001297	0.036026	18.1693
100.0	28.705195	0.187809	0.001213	0.034836	18.7809
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 17 $M=1; N=-3$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.002495	0.049813	0.992551	0.995027	0.004981
0.2	1.009925	0.098526	0.970803	0.980439	0.019705
0.3	1.022130	0.145137	0.936442	0.957166	0.043541
0.4	1.038855	0.188815	0.891938	0.926594	0.075526
0.5	1.059775	0.228953	0.840153	0.890373	0.114476
0.6	1.084515	0.265178	0.783957	0.850214	0.159107
0.7	1.112675	0.297333	0.725930	0.807724	0.208133
0.8	1.143847	0.325446	0.668183	0.764299	0.260357
0.9	1.177635	0.349682	0.612304	0.721071	0.314713
1.0	1.213663	0.370298	0.559378	0.678896	0.370298
1.2	1.291085	0.401949	0.464659	0.599915	0.482339
1.4	1.373740	0.423064	0.385731	0.528895	0.592290
1.6	1.459776	0.436134	0.321470	0.469275	0.697814
1.8	1.547797	0.443232	0.269685	0.417418	0.797819
2.0	1.636780	0.445981	0.228048	0.373266	0.891963
2.2	1.725982	0.445606	0.194487	0.335681	0.980334
2.4	1.814875	0.443015	0.167285	0.303603	1.063235
2.6	1.903085	0.438873	0.145085	0.276110	1.141070
2.8	1.990354	0.433667	0.126826	0.252429	1.214269
3.0	2.076505	0.427751	0.111686	0.231917	1.283253
3.2	2.161424	0.421381	0.099032	0.214052	1.348419
3.4	2.245040	0.417744	0.088374	0.198404	1.410130
3.6	2.327313	0.407975	0.079329	0.184624	1.468711
3.8	2.408228	0.401172	0.071599	0.172426	1.524456
4.0	2.487785	0.394406	0.064947	0.161575	1.577624
4.2	2.565996	0.387724	0.059187	0.151875	1.628444
4.4	2.642883	0.381164	0.054170	0.143167	1.677123
4.6	2.718471	0.374748	0.049776	0.135316	1.723842
4.8	2.792793	0.368492	0.045907	0.128210	1.768763
5.0	2.865880	0.362406	0.042484	0.121754	1.81203
5.5	3.043425	0.347958	0.035474	0.107962	1.91377
6.0	3.214021	0.334604	0.030119	0.096806	2.00762
6.5	3.378202	0.322287	0.025938	0.087625	2.09487
7.0	3.536469	0.310931	0.022609	0.079957	2.17652
7.5	3.689279	0.300449	0.019914	0.073471	2.25337
8.0	3.837050	0.290759	0.017701	0.067921	2.32607
8.5	3.980157	0.281781	0.015859	0.063124	2.39514
9.0	4.118939	0.273445	0.014310	0.058942	2.46101
9.5	4.253700	0.265688	0.012992	0.055267	2.52404
10.0	4.384715	0.258453	0.011862	0.052013	2.58453
11.0	4.636476	0.245354	0.010033	0.046518	2.69889
12.0	4.875941	0.233811	0.008626	0.042061	2.80573
13.0	5.104528	0.223560	0.007518	0.038379	2.90628
14.0	5.232422	0.214392	0.006628	0.035287	3.00149
15.0	5.533618	0.206140	0.005901	0.032657	3.09210
16.0	5.735963	0.198670	0.005298	0.030393	3.17871
17.0	5.931182	0.191871	0.004792	0.028426	3.26181
18.0	6.119900	0.185655	0.004362	0.026700	3.34179
19.0	6.302661	0.179946	0.003994	0.025173	3.41897
20.0	6.479941	0.174682	0.003675	0.023815	3.49365
25.0	7.297222	0.153465	0.002573	0.018779	3.83664
30.0	8.024171	0.138059	0.001935	0.015531	4.14177
35.0	8.683821	0.126286	0.001527	0.013261	4.42003
40.0	9.291072	0.116949	0.001246	0.011584	4.67798
45.0	9.856168	0.109331	0.001044	0.010293	4.91992
50.0	10.386484	0.102976	0.000892	0.009269	5.1488
55.0	10.887519	0.097577	0.000774	0.008436	5.3667
60.0	11.363497	0.092923	0.000681	0.007744	5.5754
65.0	11.817741	0.088862	0.000605	0.007160	5.7760
70.0	12.252915	0.085279	0.000543	0.006660	5.9695
75.0	12.671190	0.082090	0.000491	0.006228	6.1567
80.0	13.074367	0.079229	0.000447	0.005850	6.3383
85.0	13.463950	0.076646	0.000409	0.005516	6.5149
90.0	13.841219	0.074297	0.000377	0.005219	6.6867
95.0	14.207265	0.072151	0.000348	0.004954	6.8544
100.0	14.563031	0.070181	0.000323	0.004715	7.0181
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 18 $M=1; N=-4$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.002493	0.049751	0.990086	0.992555	0.004975
0.2	1.009901	0.098045	0.961355	0.970874	0.019609
0.3	1.022010	0.143585	0.916596	0.936771	0.043075
0.4	1.038492	0.185359	0.859777	0.892872	0.074143
0.5	1.058934	0.222698	0.795286	0.842156	0.111349
0.6	1.082873	0.255283	0.727258	0.787529	0.153170
0.7	1.109831	0.283091	0.659130	0.731524	0.198163
0.8	1.139339	0.306324	0.593454	0.676146	0.245059
0.9	1.170955	0.325336	0.531909	0.622842	0.292802
1.0	1.204280	0.340562	0.475433	0.572555	0.340562
1.2	1.274678	0.361505	0.378789	0.482834	0.433806
1.4	1.348231	0.372663	0.302650	0.408043	0.521728
1.6	1.423286	0.376937	0.243686	0.346835	0.603100
1.8	1.498695	0.376521	0.198219	0.297070	0.677739
2.0	1.573688	0.372990	0.163051	0.256592	0.745981
2.2	1.647758	0.367446	0.135651	0.223521	0.808383
2.4	1.720583	0.360650	0.114102	0.196323	0.865561
2.6	1.791969	0.353121	0.096978	0.173783	0.918114
2.8	1.861807	0.345211	0.083226	0.154951	0.966591
3.0	1.930045	0.337159	0.072065	0.139090	1.011179
3.2	1.996672	0.329125	0.062917	0.125926	1.053202
3.4	2.061703	0.321214	0.055347	0.114109	1.092128
3.6	2.125170	0.313492	0.049025	0.104188	1.128572
3.8	2.187116	0.306002	0.043703	0.095583	1.162809
4.0	2.247588	0.298768	0.039186	0.088074	1.195074
4.2	2.306641	0.291802	0.035324	0.081481	1.225570
4.4	2.364327	0.285107	0.032001	0.075661	1.254474
4.6	2.420702	0.278682	0.029122	0.070497	1.281940
4.8	2.475818	0.272521	0.026614	0.065893	1.308102
5.0	2.529728	0.266615	0.024417	0.061770	1.33307
5.5	2.659547	0.252904	0.019987	0.053158	1.39097
6.0	2.782861	0.240564	0.016673	0.046400	1.44338
6.5	2.900313	0.229431	0.014132	0.040988	1.49130
7.0	3.012468	0.219352	0.012142	0.036579	1.53546
7.5	3.119819	0.210196	0.010555	0.032931	1.57647
8.0	3.222798	0.201846	0.009269	0.029874	1.61477
8.5	3.321783	0.194204	0.008213	0.027282	1.65073
9.0	3.417107	0.187186	0.007334	0.025062	1.68467
9.5	3.509061	0.180718	0.006595	0.023143	1.71682
10.0	3.597906	0.174739	0.005967	0.021470	1.74739
11.0	3.767167	0.164040	0.004965	0.018704	1.80444
12.0	3.926454	0.154744	0.004207	0.016519	1.85693
13.0	4.077035	0.146588	0.003619	0.014755	1.90565
14.0	4.219945	0.139372	0.003153	0.013306	1.95121
15.0	4.356041	0.132939	0.002777	0.012098	1.99408
16.0	4.486043	0.127165	0.002469	0.011076	2.03464
17.0	4.610558	0.121952	0.002213	0.010203	2.07318
18.0	4.730107	0.117220	0.001997	0.009449	2.10996
19.0	4.845137	0.112903	0.001814	0.008791	2.14516
20.0	4.956035	0.108948	0.001657	0.008214	2.17896
25.0	5.459081	0.093250	0.001125	0.006146	2.33126
30.0	5.896035	0.082106	0.000827	0.004878	2.46320
35.0	6.284742	0.073744	0.000640	0.004028	2.58105
40.0	6.636508	0.067212	0.000515	0.003421	2.68849
45.0	6.958977	0.061953	0.000426	0.002967	2.78788
50.0	7.257571	0.057616	0.000360	0.002615	2.8808
55.0	7.536290	0.053971	0.000310	0.002336	2.9684
60.0	7.798172	0.050859	0.000270	0.002108	3.0515
65.0	8.045582	0.048167	0.000238	0.001920	3.1308
70.0	8.280404	0.045812	0.000212	0.001761	3.2068
75.0	8.504160	0.043731	0.000191	0.001625	3.2798
80.0	8.718101	0.041879	0.000173	0.001509	3.3503
85.0	8.923269	0.040217	0.000157	0.001407	3.4184
90.0	9.120541	0.038716	0.000144	0.001318	3.4844
95.0	9.310662	0.037353	0.000133	0.001238	3.5485
100.0	9.494274	0.036109	0.000123	0.001168	3.6109
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 19 $M=1; N=-5$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.002492	0.049689	0.987631	0.990092	0.004968
0.2	1.009877	0.097568	0.952043	0.961447	0.019513
0.3	1.021892	0.142066	0.897373	0.917019	0.042620
0.4	1.038138	0.182026	0.829321	0.860950	0.072810
0.5	1.058123	0.216774	0.753906	0.797726	0.108387
0.6	1.081312	0.246094	0.676463	0.731468	0.147656
0.7	1.107166	0.270134	0.601084	0.665500	0.189093
0.8	1.135176	0.289291	0.530497	0.602208	0.231433
0.9	1.164879	0.304102	0.466223	0.543094	0.273692
1.0	1.195871	0.315155	0.408862	0.488947	0.315155
1.2	1.260390	0.328270	0.314354	0.396259	0.393924
1.4	1.326601	0.332677	0.243387	0.322877	0.465747
1.6	1.393085	0.331423	0.190594	0.265514	0.530277
1.8	1.458536	0.326635	0.151292	0.220726	0.587943
2.0	1.523599	0.319734	0.121799	0.185573	0.639469
2.2	1.586752	0.311654	0.099415	0.157747	0.685639
2.4	1.648223	0.302994	0.082209	0.135498	0.727187
2.6	1.707937	0.294138	0.068808	0.117520	0.764761
2.8	1.765882	0.285327	0.058235	0.102837	0.798918
3.0	1.822081	0.276709	0.049792	0.090725	0.830128
3.2	1.876584	0.268371	0.042969	0.080635	0.858789
3.4	1.929452	0.260362	0.037396	0.072154	0.885230
3.6	1.980753	0.252703	0.032798	0.064964	0.909738
3.8	2.030557	0.245403	0.028968	0.058821	0.932532
4.0	2.078938	0.238456	0.025750	0.053534	0.953826
4.2	2.125963	0.231853	0.023026	0.048952	0.973785
4.4	2.171701	0.225580	0.020701	0.044957	0.992554
4.6	2.216216	0.219621	0.018704	0.041452	1.010258
4.8	2.259569	0.213959	0.016977	0.038361	1.027003
5.0	2.301819	0.208576	0.015475	0.035621	1.04288
5.5	2.402959	0.196237	0.012481	0.029992	1.07930
6.0	2.498290	0.185303	0.010275	0.025670	1.11181
6.5	2.588461	0.175564	0.008605	0.022275	1.14117
7.0	2.674025	0.166845	0.007314	0.019558	1.16791
7.5	2.755452	0.158999	0.006295	0.017347	1.19249
8.0	2.833149	0.151904	0.005478	0.015521	1.21523
8.5	2.907465	0.145459	0.004813	0.013994	1.23640
9.0	2.978702	0.139578	0.004264	0.012702	1.25621
9.5	3.047126	0.134193	0.003806	0.011599	1.27483
10.0	3.112968	0.129241	0.003420	0.010648	1.29241
11.0	3.237699	0.120447	0.002810	0.009100	1.32491
12.0	3.354268	0.112871	0.002355	0.007899	1.35446
13.0	3.463769	0.106276	0.002005	0.006947	1.38159
14.0	3.567087	0.100480	0.001731	0.006176	1.40672
15.0	3.664950	0.095344	0.001512	0.005542	1.43017
16.0	3.757960	0.090760	0.001334	0.005014	1.45217
17.0	3.846626	0.086642	0.001187	0.004567	1.47292
18.0	3.931378	0.082921	0.001064	0.004186	1.49259
19.0	4.012583	0.079542	0.000961	0.003857	1.51129
20.0	4.090560	0.076457	0.000873	0.003571	1.52915
25.0	4.440572	0.064336	0.000579	0.002571	1.60842
30.0	4.739911	0.055855	0.000417	0.001981	1.67565
35.0	5.002740	0.049564	0.000319	0.001596	1.73474
40.0	5.237911	0.044697	0.000253	0.001328	1.78791
45.0	5.451346	0.040812	0.000207	0.001132	1.83657
50.0	5.647209	0.037633	0.000174	0.000983	1.8816
55.0	5.828548	0.034978	0.000148	0.000866	1.9238
60.0	5.997662	0.032725	0.000128	0.000772	1.9635
65.0	6.156331	0.030788	0.000113	0.000696	2.0012
70.0	6.305963	0.029102	0.000100	0.000632	2.0371
75.0	6.447691	0.027620	0.897E-04	0.000578	2.0715
80.0	6.582443	0.026306	0.809E-04	0.000532	2.1045
85.0	6.710987	0.025132	0.734E-04	0.000493	2.1362
90.0	6.833968	0.024077	0.670E-04	0.000458	2.1669
95.0	6.951931	0.023123	0.615E-04	0.000428	2.1966
100.0	7.065343	0.022255	0.568E-04	0.000401	2.2255
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 20 $M=1; N=-10$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi\theta'$
0.0	1.000000	0.0	1.00000	1.00000	0.0
0.1	1.002484	0.049383	0.97549	0.97791	0.004938
0.2	1.009758	0.095252	0.90745	0.91630	0.019050
0.3	1.021327	0.134928	0.80975	0.82702	0.040478
0.4	1.036489	0.167003	0.69879	0.72429	0.066801
0.5	1.054467	0.191297	0.58839	0.62044	0.095648
0.6	1.074511	0.208487	0.48740	0.52372	0.125092
0.7	1.095965	0.219686	0.39997	0.43835	0.153780
0.8	1.118290	0.226113	0.32693	0.36560	0.180890
0.9	1.141066	0.228893	0.26723	0.30493	0.206004
1.0	1.163979	0.228979	0.21905	0.25497	0.228979
1.2	1.209360	0.223931	0.14943	0.18071	0.268717
1.4	1.253304	0.215121	0.10457	0.13106	0.301169
1.6	1.295312	0.204836	0.07520	0.09741	0.327737
1.8	1.335221	0.194267	0.05552	0.07413	0.349680
2.0	1.373040	0.184004	0.04199	0.05765	0.368008
2.2	1.408862	0.174317	0.03245	0.04572	0.383499
2.4	1.442813	0.165309	0.02557	0.03690	0.396742
2.6	1.475032	0.156994	0.02051	0.03025	0.408185
2.8	1.505655	0.149347	0.01670	0.02514	0.418172
3.0	1.534812	0.142322	0.01378	0.02115	0.426968
3.2	1.562622	0.135867	0.01152	0.01800	0.434777
3.4	1.589194	0.129929	0.00973	0.01546	0.441761
3.6	1.614625	0.124458	0.00830	0.01340	0.448051
3.8	1.639005	0.119408	0.00714	0.01171	0.453750
4.0	1.662414	0.114735	0.00620	0.01031	0.458942
4.2	1.684922	0.110403	0.00542	0.00913	0.463696
4.4	1.706596	0.109379	0.00477	0.00814	0.468069
4.6	1.727492	0.102632	0.00422	0.00729	0.472109
4.8	1.747665	0.099136	0.00376	0.00657	0.475855
5.0	1.767162	0.095868	0.00336	0.00594	0.47934
5.5	1.813222	0.088563	0.00260	0.00471	0.48710
6.0	1.855898	0.082292	0.00206	0.00382	0.49375
6.5	1.895653	0.076853	0.00166	0.00316	0.49954
7.0	1.932864	0.072093	0.00137	0.00265	0.50465
7.5	1.967840	0.067893	0.00114	0.00225	0.50920
8.0	2.000836	0.064161	0.972E-03	0.00194	0.51329
8.5	2.032067	0.060824	0.832E-03	0.00169	0.51700
9.0	2.061716	0.057821	0.720E-03	0.00148	0.52039
9.5	2.089936	0.055105	0.629E-03	0.00131	0.52350
10.0	2.116863	0.052637	0.553E-03	0.00117	0.52637
11.0	2.167280	0.048321	0.437E-03	0.947E-03	0.53153
12.0	2.213727	0.044671	0.353E-03	0.783E-03	0.53605
13.0	2.256796	0.041543	0.291E-03	0.658E-03	0.54006
14.0	2.296953	0.038833	0.244E-03	0.561E-03	0.54366
15.0	2.334575	0.036462	0.207E-03	0.485E-03	0.54693
16.0	2.369970	0.034370	0.178E-03	0.423E-03	0.54992
17.0	2.403393	0.032510	0.155E-03	0.373E-03	0.55267
18.0	2.435056	0.030845	0.136E-03	0.332E-03	0.55521
19.0	2.465139	0.029346	0.120E-03	0.297E-03	0.55759
20.0	2.493797	0.027990	0.107E-03	0.268E-03	0.55981
25.0	2.619768	0.022766	0.656E-04	0.172E-03	0.56917
30.0	2.724216	0.019218	0.444E-04	0.121E-03	0.57655
35.0	2.813565	0.016647	0.321E-04	0.905E-04	0.58266
40.0	2.891719	0.014697	0.244E-04	0.707E-04	0.58790
45.0	2.961236	0.013166	0.192E-04	0.571E-04	0.59251
50.0	3.023881	0.011932	0.156E-04	0.473E-04	0.5966
55.0	3.080923	0.010915	0.129E-04	0.399E-04	0.6003
60.0	3.133311	0.010063	0.109E-04	0.343E-04	0.6037
65.0	3.181766	0.009337	0.940E-05	0.299E-04	0.6069
70.0	3.226856	0.008713	0.817E-05	0.263E-04	0.6099
75.0	3.269031	0.008169	0.717E-05	0.234E-05	0.6126
80.0	3.308657	0.007691	0.636E-05	0.210E-04	0.6153
85.0	3.346035	0.007268	0.568E-05	0.190E-04	0.6177
90.0	3.381414	0.006890	0.512E-05	0.173E-04	0.6201
95.0	3.415003	0.006551	0.464E-05	0.158E-04	0.6223
100.0	3.446983	0.006245	0.422E-05	0.145E-04	0.6245
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 21 $M=2$; $N=-0.2$

ξ	θ	θ'	θ^n	θ^{n+1}	$-\xi^2\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.050	0.999583	-0.016667	1.000083	0.999666	0.000041
0.100	0.998333	-0.033339	1.000333	0.998666	0.000333
0.150	0.996249	-0.050022	1.000751	0.996998	0.001125
0.200	0.993330	-0.066720	1.001339	0.994660	0.002668
0.250	0.989576	-0.083437	1.002096	0.991652	0.005214
0.300	0.984986	-0.100181	1.003030	0.987971	0.009016
0.350	0.979558	-0.116955	1.004139	0.983612	0.014327
0.400	0.973290	-0.133765	1.005428	0.978574	0.021402
0.450	0.966180	-0.150617	1.006904	0.972851	0.030500
0.500	0.958227	-0.167516	1.008570	0.966440	0.041879
0.550	0.949428	-0.184469	1.010432	0.959333	0.055802
0.600	0.939779	-0.201482	1.012499	0.951526	0.072533
0.650	0.929279	-0.218561	1.014776	0.943011	0.092342
0.700	0.917922	-0.235712	1.017276	0.933780	0.115499
0.750	0.905706	-0.252944	1.020004	0.923825	0.142281
0.800	0.892626	-0.270264	1.022977	0.913136	0.172968
0.850	0.878678	-0.287679	1.026203	0.901703	0.207848
0.900	0.863856	-0.305198	1.029701	0.889715	0.247210
0.950	0.848156	-0.322830	1.033485	0.876558	0.291354
1.000	0.831571	-0.340585	1.037576	0.862819	0.340585
1.050	0.814095	-0.358474	1.041992	0.848282	0.395218
1.100	0.795721	-0.376508	1.046761	0.832931	0.455574
1.150	0.776442	-0.394699	1.051908	0.816746	0.521989
1.200	0.756249	-0.413060	1.057467	0.799708	0.594806
1.250	0.735133	-0.431607	1.063473	0.781795	0.674386
1.300	0.713085	-0.450356	1.069969	0.762979	0.761102
1.350	0.690094	-0.469325	1.077005	0.743235	0.855345
1.400	0.666148	-0.488534	1.084640	0.722531	0.957527
1.450	0.641236	-0.508006	1.092939	0.700832	1.068083
1.500	0.615343	-0.527767	1.101987	0.678100	1.187476
1.550	0.588454	-0.547846	1.111877	0.654289	1.316200
1.600	0.560552	-0.568277	1.122732	0.629351	1.454789
1.650	0.531619	-0.589099	1.134695	0.603227	1.603822
1.700	0.501635	-0.610357	1.147947	0.575851	1.763932
1.750	0.470575	-0.632107	1.162700	0.54714	1.935826
1.800	0.438415	-0.654412	1.17929	0.51702	2.120296
1.850	0.405124	-0.677353	1.19807	0.48536	2.318241
1.900	0.370667	-0.701029	1.21954	0.45205	2.530712
1.950	0.335006	-0.725564	1.24447	0.41691	2.758957
2.000	0.298094	-0.751122	1.27387	0.37973	3.004490
2.050	0.259873	-0.777925	1.30931	0.34025	3.269232
2.100	0.220276	-0.806283	1.35333	0.29810	3.555710
2.150	0.179212	-0.836660	1.41033	0.25275	3.867463
2.200	0.136564	-0.869812	1.48912	0.20336	4.209892
2.250	0.092162	-0.907145	1.6109	0.14847	4.592420
2.300	0.045727	-0.952044	1.8532	0.08474	5.036310
2.310	0.036154	-0.962695	1.9424	0.07023	5.137037
2.320	0.026469	-0.974339	2.0674	0.05472	5.244282
2.330	0.016662	-0.987485	2.2680	0.03779	5.360959
2.340	0.006711	-1.003492	2.719	0.01825	5.494725
2.341	0.005703	-1.005400	2.809	0.01602	5.509873
2.342	0.004699	-1.007402	2.921	0.01372	5.525569
2.343	0.003691	-1.009533	3.066	0.01131	5.541981
2.344	0.002680	-1.011829	3.268	0.00876	5.559333
2.345	0.001668	-1.016380	3.592	0.00599	5.578106
2.346	0.000652	-1.017411	4.335	0.00282	5.599545
2.346639	0.0	-1.020325	$+\infty$	0.0	5.618143

Table 22 $M=2$; $N=-0.5$

ξ	θ	θ'	θ^n	θ^{n+1}	$-\xi^2\theta'$
0.0	1.000000	0.0	1.00000	1.00000	0.0
0.050	0.999583	-0.016668	1.00019	0.99979	0.000041
0.100	0.998332	-0.033350	1.00083	0.99916	0.000333
0.150	0.996247	-0.050056	1.00188	0.99812	0.001126
0.200	0.993326	-0.066800	1.00334	0.99665	0.002672
0.250	0.989566	-0.083595	1.00525	0.99476	0.005224
0.300	0.984966	-0.100454	1.00760	0.99245	0.009040
0.350	0.979520	-0.117390	1.01038	0.98970	0.014380
0.400	0.973225	-0.134418	1.01365	0.98652	0.021506
0.450	0.966076	-0.151552	1.01740	0.98289	0.030689
0.500	0.958068	-0.168807	1.02164	0.97880	0.042201
0.550	0.949193	-0.186199	1.02640	0.97426	0.056325
0.600	0.939445	-0.203745	1.03171	0.96925	0.073348
0.650	0.928816	-0.221463	1.03760	0.96375	0.093568
0.700	0.917296	-0.239370	1.04410	0.95775	0.117291
0.750	0.904875	-0.257489	1.05124	0.95124	0.144837
0.800	0.891543	-0.275839	1.05907	0.94421	0.176537
0.850	0.877287	-0.294445	1.06765	0.93663	0.212736
0.900	0.862094	-0.313332	1.07700	0.92849	0.253798
0.950	0.845948	-0.332527	1.08723	0.91975	0.300105
1.000	0.828835	-0.352061	1.09841	0.91040	0.352061
1.050	0.810736	-0.371968	1.11060	0.90040	0.410094
1.100	0.791632	-0.392284	1.12391	0.88973	0.474663
1.150	0.771500	-0.413051	1.13849	0.87835	0.546259
1.200	0.750318	-0.434315	1.15444	0.86620	0.625413
1.250	0.728060	-0.456129	1.17196	0.85326	0.712701
1.300	0.704695	-0.478552	1.19123	0.83946	0.808753
1.350	0.680193	-0.501654	1.21250	0.82473	0.914264
1.400	0.654517	-0.525512	1.23605	0.80902	1.030004
1.450	0.627628	-0.550220	1.26225	0.79222	1.156837
1.500	0.599479	-0.575885	1.29155	0.77426	1.295740
1.550	0.569967	-0.608132	1.33159	0.75097	1.479949
1.600	0.539195	-0.630633	1.36183	0.73429	1.614421
1.650	0.506934	-0.660063	1.40449	0.71199	1.797022
1.700	0.473161	-0.691165	1.45375	0.68786	1.997465
1.750	0.437784	-0.724240	1.51135	0.66165	2.217984
1.800	0.400697	-0.759680	1.57976	0.63300	2.461364
1.850	0.361768	-0.798009	1.66256	0.60147	2.731187
1.900	0.320836	-0.839953	1.76545	0.56642	3.032229
1.950	0.277696	-0.886563	1.89763	0.52696	3.371155
2.000	0.232076	-0.939462	2.0757	0.48174	3.757848
2.050	0.183600	-1.001383	2.3336	0.42848	4.208311
2.100	0.131703	-1.077597	2.7555	0.36290	4.752203
2.150	0.075399	-1.181144	3.6417	0.27459	5.459839
2.160	0.063456	-1.208040	3.9697	0.25190	5.636234
2.170	0.051227	-1.238553	4.4182	0.22633	5.832228
2.180	0.038668	-1.274274	5.084	0.19664	6.055861
2.190	0.025713	-1.318406	6.235	0.16035	6.323213
2.200	0.012244	-1.379829	9.035	0.11065	6.678375
2.201	0.010860	-1.387883	9.594	0.10421	6.723466
2.202	0.009468	-1.396544	10.276	0.09730	6.771567
2.203	0.008067	-1.405958	11.132	0.08981	6.823412
2.204	0.006656	-1.416348	12.257	0.08158	6.880074
2.205	0.005234	-1.428041	13.820	0.07235	6.943173
2.206	0.003799	-1.441671	16.223	0.06163	7.015803
2.207	0.002350	-1.458515	20.627	0.04847	7.104211
2.208	0.000879	-1.482763	33.728	0.02964	7.228865
2.208588	0.0	-1.521467	$+\infty$	0.0	7.421508

Table 23 $M=2; N=-0.8$

ξ	θ	θ'	θ^n	θ^{n+1}	$-\xi^2\theta'$
0.0	1.000000	0.0	1.00000	1.000000	0.0
0.050	0.999583	-0.016669	1.00033	0.999916	0.000041
0.100	0.998332	-0.033360	1.00132	0.999666	0.000333
0.150	0.996246	-0.050090	1.00301	0.999248	0.001127
0.200	0.993322	-0.066881	1.00536	0.998660	0.002675
0.250	0.989557	-0.083753	1.00843	0.997902	0.005234
0.300	0.984945	-0.100728	1.01219	0.996970	0.009065
0.350	0.979482	-0.117829	1.01672	0.995862	0.014434
0.400	0.973160	-0.135077	1.02199	0.994573	0.021612
0.450	0.965971	-0.152498	1.02808	0.993099	0.030881
0.500	0.957906	-0.170117	1.03500	0.991435	0.042529
0.550	0.948955	-0.187961	1.04280	0.989576	0.056858
0.600	0.939106	-0.206058	1.05153	0.987513	0.074181
0.650	0.928345	-0.224440	1.06127	0.985239	0.094826
0.700	0.916657	-0.243140	1.07208	0.982746	0.119138
0.750	0.904025	-0.262194	1.08406	0.980022	0.147484
0.800	0.890431	-0.281642	1.09728	0.977057	0.180250
0.850	0.875853	-0.301527	1.11187	0.973837	0.217853
0.900	0.860270	-0.321898	1.12795	0.970346	0.260737
0.950	0.843655	-0.342808	1.14569	0.966569	0.309384
1.000	0.825979	-0.364318	1.16525	0.962484	0.364318
1.050	0.807212	-0.386495	1.18687	0.958070	0.426111
1.100	0.787317	-0.409416	1.21081	0.953300	0.495393
1.150	0.766256	-0.433169	1.23737	0.948145	0.572866
1.200	0.743985	-0.457856	1.26691	0.942568	0.659312
1.250	0.720453	-0.483594	1.29991	0.936528	0.755616
1.300	0.695605	-0.510522	1.33692	0.929977	0.862783
1.350	0.669378	-0.538805	1.37867	0.922856	0.981972
1.400	0.641699	-0.568639	1.42604	0.915095	1.114532
1.450	0.612484	-0.600264	1.48020	0.906607	1.262054
1.500	0.581638	-0.633974	1.54268	0.897285	1.426441
1.550	0.549046	-0.670140	1.61552	0.886996	1.610012
1.600	0.514575	-0.709235	1.70153	0.875567	1.815640
1.650	0.478064	-0.751875	1.8047	0.862774	2.046981
1.700	0.439315	-0.798892	1.9309	0.848311	2.308799
1.750	0.398082	-0.851441	2.0892	0.831753	2.607538
1.800	0.354051	-0.911200	2.2948	0.812481	2.952287
1.850	0.306800	-0.980745	2.5734	0.789534	3.356602
1.900	0.255744	-1.064362	2.9768	0.761309	3.842345
1.950	0.200001	-1.170029	3.6237	0.724780	4.449036
2.000	0.138089	-1.315725	4.8737	0.673026	5.262903
2.010	0.124748	-1.353148	5.2865	0.65948	5.466850
2.020	0.111012	-1.394860	5.802	0.64427	5.691591
2.030	0.096833	-1.442089	6.474	0.62690	5.942707
2.040	0.082146	-1.496696	7.384	0.60662	6.228654
2.050	0.066864	-1.561752	8.705	0.58215	6.563267
2.060	0.050858	-1.642931	10.837	0.55115	6.971939
2.070	0.033912	-1.752906	14.985	0.50824	7.511027
2.080	0.015578	-1.933936	27.923	0.43501	8.366983
2.081	0.013630	-1.961515	31.073	0.42354	8.494464
2.082	0.011653	-1.992656	35.223	0.41047	8.637612
2.083	0.009643	-2.028658	40.984	0.39522	8.802120
2.084	0.007594	-2.071668	49.615	0.37678	8.997370
2.085	0.005497	-2.125828	64.25	0.35320	9.241451
2.086	0.003334	-2.201389	95.84	0.31959	9.579119
2.087	0.001072	-2.341860	237.50	0.25470	10.200131
2.087442	0.0	-2.833272	$+\infty$	0.0	12.345746

Table 24 $M=2$; $N=-1.2$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi^2\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.001665	0.033293	0.998004	0.999667	0.000332
0.2	1.006650	0.066348	0.992077	0.998675	0.002653
0.3	1.014919	0.098936	0.982385	0.997042	0.008904
0.4	1.026415	0.130842	0.969197	0.994799	0.020934
0.5	1.041059	0.161873	0.952860	0.991984	0.040468
0.6	1.058755	0.191864	0.933781	0.988646	0.069071
0.7	1.079392	0.220679	0.912398	0.984836	0.108133
0.8	1.102848	0.248211	0.889162	0.980611	0.158855
0.9	1.128989	0.274385	0.864513	0.976027	0.222252
1.0	1.157678	0.299153	0.838869	0.971141	0.299153
1.2	1.222130	0.344408	0.786066	0.960675	0.495947
1.4	1.295067	0.384046	0.733245	0.949601	0.752732
1.6	1.375395	0.418386	0.682161	0.938241	1.071069
1.8	1.462098	0.447886	0.633910	0.926839	1.451151
2.0	1.554261	0.473068	0.589075	0.915577	1.89227
2.2	1.651073	0.494463	0.547873	0.904579	2.39320
2.4	1.751828	0.512574	0.510281	0.893926	2.95242
2.6	1.855915	0.527862	0.476135	0.883666	3.56835
2.8	1.962812	0.540736	0.445190	0.873824	4.23937
3.0	2.072073	0.551552	0.417170	0.864408	4.96397
3.2	2.183317	0.560618	0.391795	0.855414	5.74073
3.4	2.296221	0.568197	0.368793	0.846831	6.56835
3.6	2.410511	0.574511	0.347911	0.838644	7.44566
3.8	2.525954	0.579750	0.328919	0.830835	8.37159
4.0	2.642351	0.584075	0.311609	0.823383	9.34520
4.2	2.759532	0.587621	0.295799	0.816268	10.36563
4.4	2.877355	0.590502	0.281324	0.809471	11.43212
4.6	2.995695	0.592816	0.268041	0.802972	12.54399
4.8	3.114449	0.594645	0.255824	0.796753	13.70063
5.0	3.233526	0.596060	0.244561	0.790796	14.90150
5.5	3.532155	0.598149	0.219964	0.776948	18.09402
6.0	3.831422	0.598709	0.199511	0.764412	21.55353
6.5	4.130691	0.598223	0.182294	0.753000	25.27494
7.0	4.429527	0.597025	0.167637	0.742554	29.2542
7.5	4.727637	0.595345	0.155034	0.732944	33.4882
8.0	5.024820	0.593345	0.144097	0.724062	37.9741
8.5	5.320948	0.591138	0.134528	0.715817	42.7097
9.0	5.615937	0.588804	0.126093	0.708134	47.6931
9.5	5.909741	0.586402	0.118609	0.700948	52.9228
10.0	6.202335	0.583972	0.111926	0.694206	58.3971
11.0	6.783882	0.579135	0.100513	0.681874	70.0753
12.0	7.360653	0.574437	0.091138	0.670836	82.7189
13.0	7.932826	0.569946	0.083307	0.660867	96.3209
14.0	8.500624	0.565689	0.076675	0.651793	110.8751
15.0	9.064285	0.561672	0.070990	0.643477	126.376
16.0	9.624046	0.557687	0.066064	0.635811	142.819
17.0	10.180134	0.554325	0.061758	0.628708	160.200
18.0	10.732765	0.550970	0.057962	0.622096	178.514
19.0	11.282139	0.547807	0.054592	0.615916	197.758
20.0	11.828439	0.544821	0.051580	0.610118	217.928
25.0	14.519351	0.532097	0.040333	0.585612	332.560
30.0	17.153945	0.522110	0.033018	0.566405	469.899
35.0	19.743549	0.513988	0.027892	0.550699	629.635
40.0	22.296023	0.507188	0.024106	0.537470	811.501
45.0	24.817049	0.501362	0.021198	0.526077	1015.259
50.0	27.310882	0.496279	0.018897	0.516098	1240.698
55.0	29.780810	0.491777	0.017032	0.507239	1487.62
60.0	32.229437	0.487742	0.015491	0.499286	1755.87
65.0	34.658871	0.484088	0.014197	0.492081	2045.27
70.0	37.070852	0.480752	0.013096	0.485504	2355.68
75.0	39.466838	0.477683	0.012148	0.479461	2686.96
80.0	41.848065	0.474843	0.011323	0.473876	3038.99
85.0	44.215597	0.472200	0.010600	0.468689	3411.64
90.0	46.570357	0.469730	0.009960	0.463850	3804.81
95.0	48.913153	0.467411	0.009390	0.459319	4218.39
100.0	51.244698	0.465227	0.008880	0.455061	4652.27
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 25 $M=2; N=-1.5$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi^2\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.001665	0.033283	0.997507	0.999168	0.000332
0.2	1.006646	0.066269	0.990112	0.996693	0.002650
0.3	1.014899	0.098674	0.978059	0.992632	0.008880
0.4	1.026353	0.130233	0.961733	0.987078	0.020837
0.5	1.040910	0.160716	0.941628	0.980151	0.040179
0.6	1.058454	0.189928	0.918315	0.971994	0.068374
0.7	1.078848	0.217716	0.892399	0.962763	0.106680
0.8	1.101946	0.243968	0.864488	0.952620	0.156139
0.9	1.127588	0.268612	0.835168	0.941726	0.217575
1.0	1.155613	0.291612	0.804972	0.930237	0.291612
1.2	1.218152	0.332693	0.743785	0.906043	0.479078
1.4	1.288270	0.367471	0.683895	0.881041	0.720244
1.6	1.364755	0.396472	0.627216	0.855997	1.014969
1.8	1.446517	0.420351	0.574796	0.831453	1.36193
2.0	1.532600	0.439795	0.527055	0.807765	1.75918
2.2	1.622184	0.455466	0.484004	0.785144	2.20445
2.4	1.714575	0.467961	0.445415	0.763698	2.69545
2.6	1.809192	0.477807	0.410934	0.743459	3.22998
2.8	1.905552	0.485455	0.380161	0.724418	3.80597
3.0	2.003254	0.491286	0.352692	0.706532	4.42158
3.2	2.101967	0.495619	0.328141	0.689742	5.07514
3.4	2.201419	0.498718	0.306158	0.673982	5.76518
3.6	2.301387	0.500803	0.286427	0.659181	6.49041
3.8	2.401685	0.502054	0.268674	0.645270	7.24967
4.0	2.502163	0.502622	0.252654	0.632182	8.04195
4.2	2.602697	0.502629	0.238157	0.619852	8.86637
4.4	2.703184	0.502177	0.225001	0.608221	9.72215
4.6	2.803543	0.501350	0.213029	0.597236	10.60857
4.8	2.903704	0.500218	0.202102	0.586845	11.52503
5.0	3.003614	0.498839	0.192102	0.577002	12.47097
5.5	3.252014	0.494601	0.170518	0.554528	14.9616
6.0	3.498097	0.489646	0.152845	0.534667	17.6272
6.5	3.741599	0.484322	0.138170	0.516977	20.4626
7.0	3.982396	0.478851	0.125829	0.501103	23.4637
7.5	4.220450	0.473374	0.115335	0.486766	26.6272
8.0	4.455783	0.467976	0.106319	0.473737	29.9505
8.5	4.688449	0.462713	0.098504	0.461833	33.4310
9.0	4.918524	0.457615	0.091674	0.450902	37.0668
9.5	5.146095	0.452698	0.085661	0.440819	40.8560
10.0	5.371255	0.447972	0.080331	0.431481	44.7972
11.0	5.814721	0.439086	0.071319	0.414701	53.1294
12.0	6.249669	0.430926	0.064005	0.400010	62.0533
13.0	6.676796	0.423433	0.057962	0.387004	71.5601
14.0	7.096736	0.416542	0.052894	0.375379	81.6422
15.0	7.510060	0.410189	0.048588	0.364903	92.2927
16.0	7.917276	0.404317	0.044888	0.355395	103.5051
17.0	8.318836	0.398871	0.041677	0.346711	115.2738
18.0	8.715145	0.393806	0.038867	0.338737	127.593
19.0	9.106562	0.389081	0.036388	0.331377	140.458
20.0	9.493409	0.384661	0.034187	0.324555	158.864
25.0	11.368265	0.366171	0.026089	0.296587	228.857
30.0	13.162204	0.351970	0.020941	0.275635	316.773
35.0	14.892613	0.340576	0.017399	0.259128	417.206
40.0	16.571207	0.331134	0.014824	0.245653	529.814
45.0	18.206311	0.323111	0.012872	0.234362	654.300
50.0	19.804102	0.316161	0.011346	0.224710	790.403
55.0	21.369315	0.310047	0.010123	0.216323	937.89
60.0	22.905686	0.304600	0.009121	0.208943	1096.56
65.0	24.416225	0.299697	0.008288	0.202376	1266.22
70.0	25.903411	0.295245	0.007585	0.196481	1446.70
75.0	27.369309	0.291172	0.006984	0.191147	1637.84
80.0	28.815672	0.287422	0.006464	0.186288	1839.50
85.0	30.244000	0.283951	0.006012	0.181836	2051.55
90.0	31.655592	0.280722	0.005614	0.177735	2273.85
95.0	33.051581	0.277706	0.005262	0.173941	2506.30
100.0	34.432969	0.274878	0.004949	0.170416	2748.78
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 26 $M=2; N=-2$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi^2\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.001665	0.033266	0.996678	0.998337	0.000332
0.2	1.006640	0.066138	0.986850	0.993403	0.002645
0.3	1.014866	0.098239	0.970916	0.985350	0.008841
0.4	1.026251	0.129230	0.949495	0.974420	0.020676
0.5	1.040666	0.158821	0.923372	0.960922	0.039705
0.6	1.057960	0.186780	0.893430	0.945214	0.067241
0.7	1.077962	0.212940	0.860583	0.927676	0.104340
0.8	1.100485	0.237190	0.825717	0.908690	0.151802
0.9	1.125335	0.259479	0.789652	0.888624	0.210178
1.0	1.152315	0.279803	0.753107	0.867817	0.279803
1.2	1.211893	0.314732	0.680881	0.825155	0.453214
1.4	1.277737	0.342598	0.612515	0.782633	0.671493
1.6	1.348520	0.364282	0.549901	0.741553	0.932562
1.8	1.423101	0.380734	0.493774	0.702690	1.23357
2.0	1.500526	0.392866	0.444132	0.666432	1.57146
2.2	1.580014	0.401492	0.400569	0.632905	1.94322
2.4	1.660936	0.407308	0.362488	0.602070	2.34609
2.6	1.742789	0.410892	0.329238	0.573792	2.77763
2.8	1.825176	0.412716	0.300185	0.547892	3.23569
3.0	1.907784	0.413161	0.274752	0.524168	3.71845
3.2	1.990369	0.412531	0.252425	0.502419	4.22432
3.4	2.072741	0.411070	0.232760	0.482452	4.75197
3.6	2.154754	0.408970	0.215379	0.464089	5.30025
3.8	2.236297	0.406385	0.199958	0.447167	5.86819
4.0	2.317284	0.403435	0.186226	0.431539	6.45496
4.2	2.397653	0.400216	0.173951	0.417074	7.05982
4.4	2.477358	0.396806	0.162937	0.403655	7.68216
4.6	2.556367	0.393263	0.153021	0.391180	8.32144
4.8	2.634658	0.389635	0.144062	0.379555	8.97719
5.0	2.712218	0.385960	0.135941	0.368701	9.64900
5.5	2.902891	0.376742	0.118669	0.344484	11.3964
6.0	3.088991	0.367705	0.104801	0.323730	13.2373
6.5	3.270654	0.359011	0.093482	0.305749	15.1682
7.0	3.448073	0.350738	0.084109	0.290016	17.1861
7.5	3.621468	0.342914	0.076248	0.276131	19.2889
8.0	3.791063	0.335540	0.069578	0.263778	21.4745
8.5	3.957081	0.328601	0.063863	0.252711	23.7414
9.0	4.119734	0.322077	0.058919	0.242734	26.0882
9.5	4.279223	0.315940	0.054609	0.233687	28.5136
10.0	4.435734	0.310164	0.050824	0.225441	31.0164
11.0	4.740509	0.299590	0.044498	0.210947	36.2504
12.0	5.035295	0.290159	0.039441	0.198598	41.7828
13.0	5.321151	0.281700	0.035317	0.187929	47.6074
14.0	5.598974	0.274073	0.031899	0.178604	53.7183
15.0	5.869534	0.267157	0.029026	0.170371	60.1103
16.0	6.133493	0.260854	0.026581	0.163039	66.7786
17.0	6.391420	0.255082	0.024479	0.156459	73.718
18.0	6.643811	0.249773	0.022655	0.150516	80.926
19.0	6.891101	0.244869	0.021058	0.145114	88.398
20.0	7.133670	0.240323	0.019650	0.140180	96.129
25.0	8.286249	0.221709	0.014564	0.120681	138.568
30.0	9.358554	0.207822	0.011417	0.106854	187.040
35.0	10.369420	0.196925	0.009300	0.096337	241.233
40.0	11.331168	0.188054	0.007788	0.088252	300.887
45.0	12.252372	0.180632	0.006661	0.081616	365.780
50.0	13.139282	0.174287	0.005792	0.076107	435.71
55.0	13.996629	0.168772	0.005104	0.071445	510.53
60.0	14.828098	0.163912	0.004548	0.067439	590.08
65.0	15.636630	0.159580	0.004089	0.063952	674.22
70.0	16.424622	0.155682	0.003706	0.060884	762.84
75.0	17.194059	0.152147	0.003382	0.058159	855.82
80.0	17.946607	0.148918	0.003104	0.055720	953.08
85.0	18.683684	0.145952	0.002864	0.053522	1054.50
90.0	19.406510	0.143213	0.002655	0.051529	1160.02
95.0	20.116144	0.140671	0.002471	0.049711	1269.55
100.0	20.820426	0.138280	0.002306	0.048029	1384.18
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 27 $M=2; N=-3$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi^2\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.001664	0.033233	0.995024	0.996679	0.000332
0.2	1.006627	0.065877	0.980379	0.986876	0.002635
0.3	1.014801	0.097381	0.956878	0.971041	0.008764
0.4	1.026049	0.127267	0.925753	0.949868	0.020362
0.5	1.040188	0.155155	0.888513	0.924221	0.038788
0.6	1.057004	0.180773	0.846777	0.895047	0.650788
0.7	1.076261	0.203958	0.802132	0.863304	0.099939
0.8	1.097712	0.224646	0.756020	0.829893	0.143773
0.9	1.121108	0.242858	0.709671	0.795618	0.196715
1.0	1.146204	0.258681	0.664069	0.761159	0.258681
1.2	1.200585	0.283731	0.577857	0.693767	0.408573
1.4	1.259189	0.301166	0.500871	0.630692	0.590286
1.6	1.320643	0.312471	0.434153	0.573361	0.799926
1.8	1.383861	0.319017	0.377330	0.522173	1.03361
2.0	1.448011	0.321966	0.329370	0.476931	1.28786
2.2	1.512471	0.322253	0.289027	0.437145	1.55970
2.4	1.576784	0.320605	0.255083	0.402212	1.84669
2.6	1.640621	0.317578	0.226451	0.371520	2.14683
2.8	1.703751	0.313589	0.202199	0.344498	2.45854
3.0	1.766014	0.308950	0.181558	0.320635	2.78055
3.2	1.827304	0.303891	0.163895	0.299487	3.11185
3.4	1.887554	0.298583	0.148696	0.280673	3.45162
3.6	1.946729	0.293150	0.135544	0.263869	3.79923
3.8	2.004812	0.287682	0.124101	0.248801	4.15413
4.0	2.061804	0.282244	0.114092	0.235236	4.51591
4.2	2.117715	0.276883	0.105292	0.222979	4.88422
4.4	2.172565	0.271630	0.097517	0.211862	5.25877
4.6	2.226376	0.266508	0.090615	0.201744	5.63932
4.8	2.279178	0.261531	0.084462	0.192505	6.02568
5.0	2.330999	0.256707	0.078953	0.184041	6.41768
5.5	2.456469	0.245338	0.067463	0.165720	7.4214
6.0	2.576500	0.234943	0.058466	0.150639	8.4579
6.5	2.691566	0.255465	0.051284	0.138035	9.5259
7.0	2.802105	0.216825	0.045451	0.127359	10.6244
7.5	2.908517	0.208939	0.040642	0.118210	11.7528
8.0	3.011157	0.201725	0.036626	0.110289	12.9104
8.5	3.110343	0.195111	0.033233	0.103367	14.0967
9.0	3.206357	0.189029	0.030336	0.097269	15.3114
9.5	3.299451	0.183422	0.027840	0.091857	16.5539
10.0	3.389850	0.178238	0.025671	0.087023	17.8238
11.0	3.563340	0.168965	0.022101	0.078756	20.4448
12.0	3.728188	0.160914	0.019297	0.071945	23.1716
13.0	3.885499	0.153856	0.017047	0.066237	26.0018
14.0	4.036174	0.147617	0.015208	0.061384	28.9329
15.0	4.180959	0.142057	0.013682	0.057206	31.9628
16.0	4.320479	0.137068	0.012399	0.053571	35.0894
17.0	4.455257	0.132563	0.011307	0.050379	38.3107
18.0	4.585743	0.128471	0.010369	0.047553	41.624
19.0	4.712319	0.124736	0.009556	0.045032	45.029
20.0	4.835318	0.121309	0.008845	0.042771	48.523
25.0	5.405623	0.107642	0.006330	0.034222	67.276
30.0	5.918067	0.097818	0.004824	0.028552	88.036
35.0	6.387663	0.090328	0.003836	0.024508	110.652
40.0	6.823896	0.084374	0.003147	0.021475	134.999
45.0	7.233189	0.079492	0.002642	0.019113	160.972
50.0	7.620123	0.075392	0.002260	0.017221	188.482
55.0	7.988100	0.071884	0.001961	0.015671	217.44
60.0	8.339729	0.068835	0.001724	0.014377	247.80
65.0	8.667063	0.066052	0.001530	0.013281	279.49
70.0	9.001752	0.063767	0.001370	0.012340	312.46
75.0	9.315148	0.061627	0.001237	0.011524	346.65
80.0	9.618373	0.059693	0.001123	0.010809	382.03
85.0	9.912373	0.057933	0.001026	0.010177	418.56
90.0	10.197955	0.056322	0.000942	0.009615	456.21
95.0	10.475811	0.054840	0.000869	0.009112	494.93
100.0	10.746543	0.053470	0.000805	0.008658	534.70
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 28 $M=2; N=-4$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi^2\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.001663	0.033200	0.993374	0.995026	0.000332
0.2	1.006613	0.065618	0.973975	0.980417	0.002624
0.3	1.014736	0.096537	0.943161	0.957060	0.008688
0.4	1.025851	0.125360	0.902947	0.926289	0.020057
0.5	1.039724	0.151646	0.855711	0.889703	0.037911
0.6	1.056086	0.175120	0.803899	0.848987	0.063043
0.7	1.074650	0.195663	0.749775	0.805746	0.095875
0.8	1.095122	0.213292	0.695263	0.761398	0.136507
0.9	1.117215	0.228124	0.641877	0.717115	0.184780
1.0	1.140660	0.240351	0.590710	0.673800	0.240351
1.2	1.190631	0.257949	0.497611	0.592472	0.371447
1.4	1.243344	0.268103	0.418441	0.520266	0.525482
1.6	1.297503	0.272709	0.352830	0.457798	0.698136
1.8	1.352164	0.273345	0.299145	0.404493	0.88563
2.0	1.406659	0.271231	0.255413	0.359280	1.08492
2.2	1.460534	0.267274	0.219762	0.320970	1.29360
2.4	1.513490	0.262128	0.190581	0.288443	1.50986
2.6	1.565337	0.256259	0.166558	0.260720	1.73231
2.8	1.615967	0.249992	0.146645	0.236974	1.95994
3.0	1.665323	0.243552	0.130018	0.216523	2.19197
3.2	1.713387	0.237094	0.116031	0.198807	2.42784
3.4	1.760167	0.230719	0.104180	0.183374	2.66711
3.6	1.805685	0.224497	0.094065	0.169853	2.90948
3.8	1.849978	0.218468	0.085375	0.157942	3.15468
4.0	1.893087	0.212659	0.077860	0.147396	3.40255
4.2	1.935058	0.207083	0.071322	0.138012	3.65295
4.4	1.975937	0.201744	0.065600	0.129622	3.90577
4.6	2.015771	0.196641	0.060566	0.122088	4.16094
4.8	2.054609	0.191770	0.056115	0.115295	4.41839
5.0	2.092495	0.187123	0.052160	0.109145	4.67809
5.5	2.183329	0.176427	0.044007	0.096081	5.3369
6.0	2.269121	0.166922	0.037719	0.085790	6.0092
6.5	2.350425	0.158456	0.032765	0.077012	6.6947
7.0	2.427727	0.150888	0.028787	0.069887	7.3935
7.5	2.501443	0.144095	0.025540	0.063889	8.1053
8.0	2.571933	0.137971	0.022853	0.058778	8.8301
8.5	2.639511	0.132428	0.020601	0.054378	9.5679
9.0	2.704446	0.127390	0.018693	0.050555	10.3186
9.5	2.766975	0.122793	0.017059	0.047204	11.0821
10.0	2.827304	0.118582	0.015649	0.044246	11.8582
11.0	2.942066	0.111143	0.013347	0.039268	13.4483
12.0	3.049948	0.104777	0.011556	0.035247	15.0879
13.0	3.151907	0.099268	0.010132	0.031935	16.7763
14.0	3.248714	0.094450	0.008977	0.029165	18.5123
15.0	3.340997	0.090200	0.008025	0.026814	20.2951
16.0	3.429272	0.086420	0.007230	0.024796	22.123
17.0	3.513970	0.083034	0.006558	0.023046	23.997
18.0	3.595453	0.079982	0.005983	0.021514	25.914
19.0	3.674029	0.077214	0.005488	0.020163	27.874
20.0	3.749963	0.074691	0.005056	0.018963	29.876
25.0	4.097031	0.064779	0.003549	0.014540	40.487
30.0	4.402590	0.057809	0.002661	0.011718	52.028
35.0	4.678007	0.052586	0.002088	0.009768	64.417
40.0	4.930319	0.048491	0.001692	0.008344	77.587
45.0	5.164214	0.045174	0.001405	0.007260	91.478
50.0	5.382995	0.042417	0.001190	0.006411	106.043
55.0	5.589084	0.040079	0.001024	0.005527	121.24
60.0	5.784326	0.038064	0.000893	0.005167	137.03
65.0	5.970154	0.036304	0.000787	0.004699	153.38
70.0	6.147717	0.034751	0.000700	0.004303	170.28
75.0	6.317947	0.033366	0.000627	0.003965	187.68
80.0	6.481612	0.032121	0.000566	0.003672	205.57
85.0	6.639358	0.030995	0.000514	0.003416	223.93
90.0	6.791731	0.029969	0.000469	0.003191	242.75
95.0	6.939199	0.029030	0.000431	0.002992	262.00
100.0	7.082164	0.028167	0.000397	0.002815	281.67
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 29 $M=2; N=-5$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi^2\theta'$
0.0	1.000000	0.0	1.000000	1.000000	0.0
0.1	1.001662	0.033167	0.991728	0.993377	0.000331
0.2	1.006600	0.065361	0.967638	0.974026	0.002614
0.3	1.014672	0.095706	0.929757	0.943399	0.008613
0.4	1.025657	0.123506	0.881026	0.903631	0.019761
0.5	1.039273	0.148285	0.824804	0.857197	0.037071
0.6	1.055204	0.169792	0.764391	0.806589	0.061125
0.7	1.073121	0.187982	0.702678	0.754058	0.092111
0.8	1.092694	0.202969	0.641957	0.701463	0.129900
0.9	1.113615	0.214978	0.583879	0.650217	0.174132
1.0	1.135600	0.224303	0.529506	0.601308	0.224303
1.2	1.181786	0.236196	0.433815	0.512676	0.340122
1.4	1.229616	0.241157	0.355753	0.437440	0.472668
1.6	1.277930	0.241321	0.293402	0.374947	0.617782
1.8	1.325936	0.238319	0.243998	0.323525	0.77215
2.0	1.373126	0.233325	0.204855	0.281292	0.93330
2.2	1.419188	0.227152	0.173699	0.246512	1.09941
2.4	1.463946	0.220352	0.148721	0.217720	1.26922
2.6	1.507312	0.213287	0.128523	0.193725	1.44182
2.8	1.549259	0.206196	0.112041	0.173581	1.61658
3.0	1.589799	0.199229	0.098466	0.156541	1.79306
3.2	1.628966	0.192478	0.087184	0.142020	1.97098
3.4	1.666808	0.185996	0.077726	0.129555	2.15012
3.6	1.703384	0.179811	0.069732	0.118781	2.33035
3.8	1.738753	0.173933	0.062923	0.109407	2.51159
4.0	1.772978	0.168361	0.057079	0.101201	2.69378
4.2	1.806118	0.163089	0.052031	0.093975	2.87689
4.4	1.838233	0.158105	0.047642	0.087578	3.06091
4.6	1.869378	0.153395	0.043803	0.081886	3.24584
4.8	1.899608	0.148944	0.040427	0.076796	3.43167
5.0	1.928972	0.144737	0.037442	0.072226	3.61842
5.5	1.998899	0.135187	0.031336	0.062637	4.0894
6.0	2.064361	0.126845	0.026672	0.055062	4.5664
6.5	2.125913	0.119519	0.023028	0.048957	5.0497
7.0	2.184023	0.113050	0.020123	0.043951	5.5394
7.5	2.239084	0.107303	0.017768	0.039784	6.0358
8.0	2.291429	0.102171	0.015829	0.036272	6.5389
8.5	2.341342	0.097563	0.014212	0.033276	7.0489
9.0	2.389067	0.093405	0.012848	0.030696	7.5658
9.5	2.434812	0.089636	0.011686	0.028453	8.0896
10.0	2.478760	0.086205	0.010686	0.026488	8.6205
11.0	2.561872	0.080190	0.009061	0.023215	9.7030
12.0	2.639446	0.075093	0.007806	0.020603	10.8133
13.0	2.712297	0.070716	0.006812	0.018477	11.9511
14.0	2.781072	0.066917	0.006010	0.016716	13.1159
15.0	2.846289	0.063587	0.005353	0.015236	14.3072
16.0	2.908375	0.060643	0.004805	0.013976	15.5246
17.0	2.967682	0.058019	0.004344	0.012892	16.767
18.0	3.024503	0.055664	0.003951	0.011950	18.035
19.0	3.079088	0.053539	0.003613	0.011125	19.327
20.0	3.131647	0.051609	0.003319	0.010397	20.643
25.0	3.369666	0.044104	0.002301	0.007756	27.565
30.0	3.576474	0.038901	0.001708	0.006111	35.011
35.0	3.760903	0.035045	0.001329	0.004998	42.930
40.0	3.928349	0.032049	0.001068	0.004199	51.279
45.0	4.082370	0.029640	0.000881	0.003600	60.022
50.0	4.225452	0.027651	0.000742	0.003136	69.129
55.0	4.359405	0.025974	0.000635	0.002768	78.57
60.0	4.485599	0.024537	0.000550	0.002470	88.33
65.0	4.605093	0.023288	0.000482	0.002223	98.39
70.0	4.718731	0.022189	0.000427	0.002016	108.72
75.0	4.827196	0.021214	0.000381	0.001841	119.33
80.0	4.931048	0.020341	0.000343	0.001691	130.18
85.0	5.030755	0.019554	0.000310	0.001561	141.28
90.0	5.126714	0.018840	0.000282	0.001447	152.60
95.0	5.219261	0.018188	0.000258	0.001347	164.14
100.0	5.308687	0.017590	0.000237	0.001259	175.90
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$

Table 30 $M=2; N=-10$

ξ	θ	θ'	θ^n	θ^{n+1}	$\xi^2\theta'$
0.0	1.CCCCC0	0.0	1.00000	1.00000	0.0
0.1	1.001658	0.033003	0.98356	0.98519	0.000330
0.2	1.006536	0.064103	0.93692	0.94304	0.002564
0.3	1.014363	0.091750	0.86709	0.87954	0.008257
0.4	1.024738	0.114968	0.78319	0.80256	0.018394
0.5	1.037196	0.133395	0.69404	0.71986	0.033348
0.6	1.051262	0.147176	0.60658	0.63767	0.052983
0.7	1.066493	0.156789	0.52531	0.56024	0.076826
0.8	1.082502	0.162870	0.45259	0.48993	0.104237
0.9	1.098971	0.166092	0.38916	0.42768	0.134534
1.0	1.115646	0.167080	0.33475	0.37347	0.167080
1.2	1.148880	0.164428	0.24960	0.28676	0.236777
1.4	1.181179	0.158146	0.18916	0.22343	0.309967
1.6	1.212031	0.150219	0.14617	0.17716	0.384561
1.8	1.241233	0.141777	0.11520	0.14299	0.45935
2.0	1.268749	0.133429	0.09252	0.11738	0.53371
2.2	1.294632	0.125480	0.07560	0.09787	0.60732
2.4	1.318977	0.118066	0.06275	0.08276	0.68006
2.6	1.341897	0.111229	0.05282	0.07088	0.75191
2.8	1.363507	0.104963	0.04502	0.06138	0.82291
3.0	1.383918	0.099236	0.03880	0.05370	0.89312
3.2	1.403235	0.094007	0.03378	0.04740	0.96263
3.4	1.421552	0.089232	0.02967	0.04218	1.03152
3.6	1.438955	0.084867	0.02627	0.03780	1.09987
3.8	1.455523	0.080869	0.02343	0.03410	1.16775
4.0	1.471325	0.077202	0.02103	0.03094	1.23524
4.2	1.486424	0.073831	0.01899	0.02823	1.30239
4.4	1.500875	0.070726	0.01724	0.02587	1.36926
4.6	1.514730	0.067860	0.01572	0.02382	1.43591
4.8	1.528034	0.065208	0.01441	0.02201	1.50239
5.0	1.540827	0.062749	0.01325	0.02042	1.56873
5.5	1.570806	0.057330	0.01093	0.01717	1.7342
6.0	1.598299	0.052767	0.00919	0.01469	1.8996
6.5	1.623686	0.048882	0.00785	0.01274	2.0652
7.0	1.647272	0.045539	0.00679	0.01119	2.2314
7.5	1.669300	0.042638	0.00595	0.00993	2.3984
8.0	1.689970	0.040098	0.00526	0.00889	2.5662
8.5	1.709448	0.037858	0.00469	0.00802	2.7352
9.0	1.727870	0.035869	0.00421	0.00728	2.9053
9.5	1.745352	0.034091	0.00381	0.00665	3.0767
10.0	1.761992	0.032494	0.00346	0.00610	3.2494
11.0	1.793066	0.029742	0.00291	0.00521	3.5988
12.0	1.821633	0.027457	0.00248	0.00452	3.9539
13.0	1.848101	0.025530	0.00215	0.00397	4.3146
14.0	1.872487	0.023883	0.00188	0.00352	4.6811
15.0	1.895942	0.022458	0.00166	0.00315	5.0532
16.0	1.917765	0.021214	0.00148	0.00284	5.4309
17.0	1.938420	0.020117	0.00133	0.00258	5.8140
18.0	1.958042	0.019143	0.00120	0.00236	6.202
19.0	1.976742	0.018272	0.00109	0.00216	6.596
20.0	1.994616	0.017487	0.00100	0.00200	6.995
25.0	2.074032	0.014496	0.678E-03	0.00140	9.060
30.0	2.141184	0.012481	0.493E-03	0.00105	11.233
35.0	2.199761	0.011020	0.376E-03	0.829E-03	13.499
40.0	2.251956	0.009904	0.298E-03	0.671E-03	15.847
45.0	2.299189	0.009020	0.242E-03	0.556E-03	18.266
50.0	2.342433	0.008300	0.201E-03	0.470E-03	20.750
55.0	2.382389	0.007599	0.169E-03	0.404E-03	23.29
60.0	2.419580	0.007190	0.145E-03	0.351E-03	25.88
65.0	2.454408	0.006751	0.126E-03	0.309E-03	28.52
70.0	2.487188	0.006369	0.110E-03	0.274E-03	31.20
75.0	2.518175	0.006032	0.975E-04	0.245E-03	33.93
80.0	2.547575	0.005733	0.868E-04	0.221E-03	36.69
85.0	2.575561	0.005465	0.778E-04	0.200E-03	39.48
90.0	2.602676	0.005224	0.702E-04	0.182E-03	42.31
95.0	2.627843	0.005005	0.636E-04	0.167E-03	45.17
100.0	2.652366	0.004806	0.580E-04	0.153E-03	48.06
$+\infty$	$+\infty$	0.0	0.0	0.0	$+\infty$