```
Exit[]

a = {1, 2, 3, 4, 5}; b = {3, 3.1, 4, 4.5, 5}; A = 4; B = 4;

Exps[x_] := Normal[Series[Exp[xx], {xx, 0, 100}]] /. xx → x

p[i_, x_] := Exps[a[[i]] * x[[1]] + b[[i]] * x[[2]]]; Z[x_] := Sum[p[i, x], {i, 1, 5}];

f[x_] := Simplify[{Sum[a[[i]] * p[i, x], {i, 1, 5}] / A - Z[x],
    Sum[b[[i]] * p[i, x], {i, 1, 5}] / B - Z[x]}];

NSolve[f[{x1, x2}] == 0, {x1, x2}]

Hold[Abort[], Abort[]]

f[{10, 2}]
```

$\{2.85502 \times 10^{25},\ 2.85504 \times 10^{25}\}$

```
J[x_] := Simplify[Transpose[{D[f[{x1, x2}], x1], D[f[{x1, x2}], x2]}]] /. x1 → x[[1]] /.
  x2 → x[[2]]

x = {0.4, 0.3}; f[x]
While[ Sqrt[f[x].f[x]] > 0.001,
 Print[f[x], x];
 x -= LinearSolve[J[x], -f[x]]
]
```

{−0.0492306, 8.48064}{0.4, 0.3}

```
$Aborted
```

{−0.0492306, 8.48064}

{−0.00271413, 0.467545}

{−0.00271413, 0.467545}{0.4, 0.3}

{−1.99999, −0.899993}{29.9115, −53.8272}

{1.000000, 1.000000}$\{6.26379 \times 10^{7},\ -9.85703 \times 10^{7}\}$

General::unfl : Underflow occurred in computation. ≫

General::unfl : Underflow occurred in computation. ≫

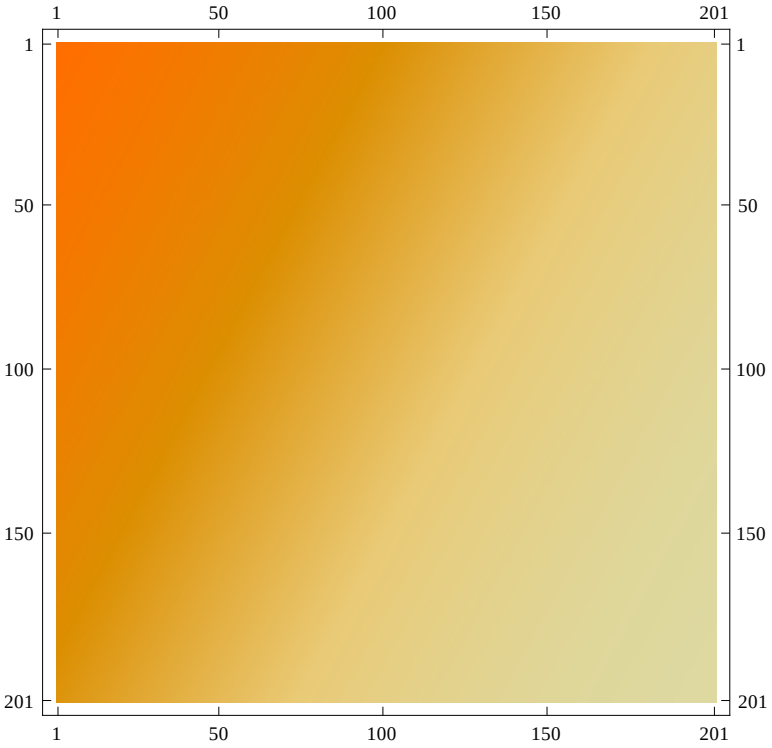
General::unfl : Underflow occurred in computation. ≫

General::stop : Further output of General::unfl will be suppressed during this calculation. ≫

```
nN = 100; h = 0.002;

M = Table[Table[f[{i, j} * h].f[{i, j} * h], {i, -nN, nN}], {j, -nN, nN}];
```

MatrixPlot[M]



M // MatrixForm

0.0418833	0.0151702	0.0109579	0.0205675	0.0358083	0.0515882	0.0656297	0.0773084	0.
0.0674849	0.0266101	0.0108744	0.0139867	0.0270184	0.0430375	0.0582905	0.0713545	0.
0.0999452	0.0458572	0.0166536	0.0103578	0.0189505	0.0340586	0.0501409	0.0645863	0.
0.137295	0.0727562	0.0296706	0.0113525	0.0127464	0.0251704	0.0413061	0.0569556	0.
0.177025	0.106022	0.0505367	0.018632	0.00992329	0.0172437	0.0321086	0.0484895	0.
0.216645	0.143481	0.0787697	0.0334104	0.0122134	0.0115564	0.0231664	0.0393564	0.
0.254125	0.182577	0.11278	0.0560021	0.021218	0.00974342	0.015485	0.0299565	0.
0.288121	0.220922	0.150213	0.0855674	0.0379331	0.0135727	0.0104906	0.0210277	0.
0.317967	0.256685	0.18851	0.120217	0.0623238	0.0245335	0.00992774	0.0137301	0.
0.343542	0.288742	0.225426	0.157458	0.093172	0.0433383	0.0155616	0.00964496	0.
0.365086	0.31662	0.259356	0.194776	0.128312	0.0695547	0.0287036	0.0106065	0.
0.383034	0.340331	0.289403	0.230113	0.165162	0.10158	0.0497134	0.0183226	0.
0.397898	0.360193	0.315279	0.262108	0.201311	0.137014	0.0777224	0.0338487	0.
0.410186	0.376679	0.337122	0.290097	0.234927	0.17325	0.110759	0.0571237	0.
0.420364	0.390301	0.355318	0.313964	0.264908	0.20804	0.146246	0.0868218	0.
0.428834	0.401554	0.370362	0.333959	0.290813	0.239809	0.18163	0.120642	0.
0.435932	0.410878	0.382766	0.350523	0.31269	0.267719	0.214876	0.155908	0.
0.441935	0.418651	0.393003	0.364165	0.330879	0.291544	0.244693	0.190193	0.
0.447066	0.425183	0.40149	0.375387	0.345864	0.31147	0.270504	0.221729	0.
0.451502	0.430728	0.408576	0.384641	0.35816	0.327918	0.292277	0.249517	0.
0.455386	0.435489	0.414548	0.392317	0.368251	0.341395	0.310318	0.273229	0.
0.45883	0.439629	0.419636	0.398736	0.376567	0.352412	0.325104	0.293002	0.
0.461922	0.443275	0.424025	0.40416	0.383467	0.361435	0.337157	0.309242	0.
0.464732	0.446527	0.427861	0.408798	0.389246	0.368864	0.346975	0.322461	0.
0.467317	0.449468	0.431258	0.412817	0.394142	0.375031	0.354999	0.333183	0.
0.46972	0.452158	0.434308	0.416347	0.398343	0.380203	0.361601	0.341888	0.
0.471975	0.454648	0.437083	0.41949	0.401998	0.384596	0.367082	0.348989	0.

0.474111	0.456977	0.439637	0.422329	0.405224	0.388378	0.371687	0.354826	0.
0.47615	0.459177	0.442016	0.424926	0.408112	0.391682	0.375606	0.359675	0.
0.478109	0.461273	0.444254	0.427331	0.410734	0.39461	0.378991	0.363753	0.
0.480003	0.463284	0.446381	0.429584	0.413146	0.397245	0.381958	0.367231	0.
0.481843	0.465225	0.448416	0.431716	0.415392	0.399648	0.3846	0.370244	0.
0.483638	0.46711	0.450379	0.433751	0.417506	0.40187	0.386986	0.372894	0.
0.485394	0.468949	0.452283	0.435709	0.419517	0.40395	0.389174	0.375262	0.
0.487119	0.470749	0.454139	0.437605	0.421446	0.405918	0.391206	0.37741	0.
0.488816	0.472518	0.455956	0.439451	0.42331	0.407797	0.393116	0.379388	0.
0.49049	0.47426	0.457742	0.441259	0.425122	0.409608	0.394932	0.381232	0.
0.492143	0.475979	0.459501	0.443034	0.426894	0.411364	0.396673	0.382973	0.
0.493778	0.477678	0.46124	0.444785	0.428634	0.413079	0.398356	0.384634	0.
0.495397	0.479362	0.46296	0.446515	0.430349	0.414761	0.399995	0.386233	0.
0.497	0.48103	0.464665	0.448228	0.432045	0.416418	0.401601	0.387784	0.
0.498591	0.482686	0.466358	0.449929	0.433726	0.418056	0.40318	0.3893	0.
0.500168	0.48433	0.46804	0.451619	0.435395	0.419679	0.404741	0.390788	0.
0.501734	0.485963	0.469713	0.4533	0.437055	0.421293	0.406288	0.392257	0.
0.503288	0.487587	0.471377	0.454975	0.438709	0.422899	0.407826	0.393712	0.
0.504831	0.489201	0.473034	0.456643	0.440358	0.424501	0.409357	0.395158	0.
0.506364	0.490807	0.474685	0.458307	0.442004	0.4261	0.410885	0.396598	0.
0.507886	0.492404	0.476329	0.459967	0.443648	0.427697	0.412412	0.398035	0.
0.509398	0.493993	0.477967	0.461623	0.44529	0.429295	0.413939	0.399472	0.
0.5109	0.495574	0.479599	0.463276	0.446931	0.430893	0.415468	0.400911	0.
0.512391	0.497147	0.481226	0.464926	0.448571	0.432493	0.416999	0.402353	0.
0.513873	0.498711	0.482848	0.466573	0.450212	0.434095	0.418535	0.403799	0.
0.515344	0.500268	0.484463	0.468218	0.451852	0.4357	0.420074	0.405251	0.
0.516804	0.501816	0.486074	0.469859	0.453493	0.437307	0.421619	0.406708	0.
0.518255	0.503356	0.487678	0.471498	0.455134	0.438917	0.423168	0.408172	0.
0.519694	0.504887	0.489277	0.473134	0.456775	0.44053	0.424723	0.409643	0.
0.521124	0.50641	0.490869	0.474767	0.458416	0.442146	0.426284	0.411121	0.
0.522542	0.507924	0.492456	0.476397	0.460057	0.443765	0.427849	0.412607	0.
0.52395	0.50943	0.494036	0.478024	0.461697	0.445387	0.429421	0.4141	0.
0.525346	0.510926	0.495609	0.479646	0.463338	0.447011	0.430997	0.415601	0.
0.526732	0.512413	0.497176	0.481265	0.464977	0.448638	0.432579	0.41711	0.
0.528106	0.51389	0.498735	0.48288	0.466615	0.450267	0.434167	0.418627	0.
0.529469	0.515358	0.500287	0.48449	0.468253	0.451898	0.435759	0.420151	0.
0.530821	0.516816	0.501832	0.486095	0.469888	0.453531	0.437356	0.421682	0.
0.532161	0.518265	0.503369	0.487696	0.471522	0.455165	0.438958	0.423221	0.
0.53349	0.519703	0.504899	0.489292	0.473154	0.456801	0.440564	0.424767	0.
0.534806	0.52113	0.50642	0.490882	0.474784	0.458438	0.442174	0.42632	0.
0.536111	0.522548	0.507932	0.492466	0.476411	0.460075	0.443788	0.427879	0.
0.537404	0.523954	0.509436	0.494044	0.478035	0.461712	0.445406	0.429445	0.
0.538685	0.52535	0.510931	0.495616	0.479656	0.46335	0.447027	0.431018	0.
0.539954	0.526735	0.512417	0.497181	0.481273	0.464987	0.448651	0.432597	0.
0.54121	0.528109	0.513894	0.49874	0.482886	0.466624	0.450278	0.434181	0.
0.542455	0.529471	0.515361	0.500291	0.484495	0.46826	0.451907	0.435771	0.
0.543687	0.530823	0.516819	0.501836	0.4861	0.469894	0.453539	0.437366	0.
0.544906	0.532163	0.518267	0.503372	0.4877	0.471527	0.455172	0.438966	0.
0.546113	0.533491	0.519704	0.504901	0.489295	0.473158	0.456806	0.440571	0.
0.547308	0.534807	0.521132	0.506421	0.490884	0.474787	0.458442	0.44218	0.
0.54849	0.536112	0.522549	0.507934	0.492468	0.476414	0.460078	0.443793	0.
0.549659	0.537405	0.523955	0.509437	0.494046	0.478037	0.461715	0.44541	0.
0.550816	0.538685	0.525351	0.510932	0.495617	0.479657	0.463352	0.44703	0.
0.551961	0.539954	0.526736	0.512418	0.497183	0.481274	0.464989	0.448654	0.
0.553092	0.541211	0.528109	0.513895	0.498741	0.482887	0.466626	0.45028	0.

0.554211	0.542455	0.529472	0.515362	0.500292	0.484496	0.468261	0.451909	0.
0.555317	0.543687	0.530823	0.516819	0.501836	0.486101	0.469895	0.45354	0.
0.556411	0.544906	0.532163	0.518267	0.503373	0.4877	0.471528	0.455173	0.
0.557492	0.546113	0.533491	0.519705	0.504901	0.489295	0.473159	0.456807	0.
0.55856	0.547308	0.534807	0.521132	0.506422	0.490885	0.474788	0.458443	0.
0.559615	0.54849	0.536112	0.522549	0.507934	0.492468	0.476414	0.460079	0.
0.560658	0.54966	0.537405	0.523955	0.509438	0.494046	0.478037	0.461716	0.
0.561688	0.550816	0.538686	0.525351	0.510932	0.495618	0.479658	0.463353	0.
0.562706	0.551961	0.539954	0.526736	0.512418	0.497183	0.481275	0.46499	0.
0.563711	0.553092	0.541211	0.528109	0.513895	0.498741	0.482888	0.466626	0.
0.564703	0.554211	0.542455	0.529472	0.515362	0.500292	0.484496	0.468261	0.
0.565683	0.555317	0.543687	0.530823	0.516819	0.501836	0.486101	0.469896	0.
0.566651	0.556411	0.544906	0.532163	0.518267	0.503373	0.487701	0.471528	0.
0.567606	0.557492	0.546113	0.533491	0.519705	0.504901	0.489295	0.473159	0.
0.568549	0.55856	0.547308	0.534807	0.521132	0.506422	0.490885	0.474788	0.
0.569479	0.559615	0.54849	0.536112	0.522549	0.507934	0.492468	0.476414	0.
0.570397	0.560658	0.54966	0.537405	0.523955	0.509438	0.494046	0.478038	0.
0.571303	0.561688	0.550816	0.538686	0.525351	0.510932	0.495618	0.479658	0.