

## Tablice do obliczania współczynników kierunkowych w układzie gradowym

### Sposób użycia tablic

Tablice służą do obliczenia współczynników kierunkowych:

$$A = \frac{\Delta x}{\Delta x^2 + \Delta y^2} \quad ; \quad B = \frac{\Delta y}{\Delta x^2 + \Delta y^2}$$

Dla obliczenia współczynników kierunkowych należy:

- 1) obliczyć sumę kwadratów przyrostów współrzędnych wyrażoną w kilometrach

$$S^2 = \Delta x^2 + \Delta y^2$$

- 2) następnie wg wartości  $S^2$  znaleźć w tablicach odpowiadającą jej wartość współczynnika  $K$
- 3) wartości przyrostów  $\Delta x$  i  $\Delta y$  nastawiamy na arytmometr i po pomnożeniu przez odszukaną wielkość  $K$  otrzymujemy wartości współczynników kierunkowych:

$$A = \Delta x \cdot K \quad ; \quad B = \Delta y \cdot K$$

*Uwaga:* 1) znak dziesiętny współczynnika  $K$  postawiono w założeniu, że w równaniu błędów poprawki  $dx$  i  $dy$  wyrażone będą w centymetrach;

- 2) wartości przyrostów współrzędnych  $\Delta x$  i  $\Delta y$  podajemy zawsze w kilometrach.

*Przykład:*

$$\begin{aligned} X_1 &= 20000,75 & Y_1 &= 21000,60 \\ X_2 &= 15000,23 & Y_2 &= 17000,00 \\ \Delta x_{1-2} &= 5000,52 & \Delta y_{1-2} &= 4000,60 \\ &= 5,000 \text{ km.} & &= 4,001 \text{ km.} \\ S^2 &= \Delta x_{1-2}^2 + \Delta y_{1-2}^2 = 41,008, & K &= 0,155, \\ A &= \Delta x_{1-2} \cdot K = 0,776 \\ B &= \Delta y_{1-2} \cdot K = 0,621 \end{aligned}$$



$\frac{S^2}{K}$ w km	$\frac{S^2}{K}$ w km	$\frac{S^2}{K}$ w km	$\frac{S^2}{K}$ w km	$\frac{S^2}{K}$ w km	$\frac{S^2}{K}$ w km	$\frac{S^2}{K}$ w km	$\frac{S^2}{K}$ w km
0.2546	25.0	0.3298	19.3	0.4681	13.6	0.6503	9.79
0.2557	24.9	0.3316	19.2	0.4716	13.5	0.6509	9.78
0.2567	24.8	0.3333	19.1	0.4751	13.4	0.6516	9.77
0.2577	24.7	0.3351	19.0	0.4787	13.3	0.6523	9.76
0.2588	24.6	0.3368	18.9	0.4823	13.2	0.6529	9.75
0.2598	24.5	0.3386	18.8	0.4860	13.1	0.6536	9.74
0.2609	24.4	0.3404	18.7	0.4897	13.0	0.6543	9.73
0.2620	24.3	0.3423	18.6	0.4935	12.9	0.6550	9.72
0.2631	24.2	0.3441	18.5	0.4974	12.8	0.6556	9.71
0.2642	24.1	0.3460	18.4	0.5013	12.7	0.6563	9.70
0.2653	24.0	0.3479	18.3	0.5052	12.6	0.6570	9.69
0.2664	23.9	0.3498	18.2	0.5093	12.5	0.6577	9.68
0.2675	23.8	0.3517	18.1	0.5134	12.4	0.6583	9.67
0.2686	23.7	0.3537	18.0	0.5176	12.3	0.6590	9.66
0.2697	23.6	0.3556	17.9	0.5218	12.2	0.6597	9.65
0.2709	23.5	0.3576	17.8	0.5261	12.1	0.6604	9.64
0.2721	23.4	0.3597	17.7	0.5305	12.0	0.6611	9.63
0.2732	23.3	0.3617	17.6	0.5350	11.9	0.6618	9.62
0.2744	23.2	0.3638	17.5	0.5395	11.8	0.6625	9.61
0.2756	23.1	0.3659	17.4	0.5441	11.7	0.6631	9.60
0.2768	23.0	0.3680	17.3	0.5488	11.6	0.6638	9.59
0.2780	22.9	0.3701	17.2	0.5536	11.5	0.6645	9.58
0.2792	22.8	0.3723	17.1	0.5584	11.4	0.6652	9.57
0.2804	22.7	0.3745	17.0	0.5634	11.3	0.6659	9.56
0.2817	22.6	0.3767	16.9	0.5684	11.2	0.6666	9.55
0.2829	22.5	0.3789	16.8	0.5735	11.1	0.6673	9.54
0.2842	22.4	0.3812	16.7	0.5787	11.0	0.6680	9.53
0.2855	22.3	0.3835	16.6	0.5840	10.9	0.6687	9.52
0.2868	22.2	0.3858	16.5	0.5895	10.8	0.6694	9.51
0.2881	22.1	0.3882	16.4	0.5950	10.7	0.6701	9.50
0.2894	22.0	0.3906	16.3	0.6006	10.6	0.6708	9.49
0.2907	21.9	0.3930	16.2	0.6063	10.5	0.6715	9.48
0.2920	21.8	0.3954	16.1	0.6121	10.4	0.6722	9.47
0.2934	21.7	0.3979	16.0	0.6181	10.3	0.6730	9.46
0.2947	21.6	0.4004	15.9	0.6241	10.2	0.6737	9.45
0.2961	21.5	0.4029	15.8	0.6303	10.1	0.6744	9.44
0.2975	21.4	0.4055	15.7	0.6366	10.0	0.6751	9.43
0.2989	21.3	0.4081	15.6	0.6373	9.99	0.6758	9.42
0.3003	21.2	0.4107	15.5	0.6379	9.98	0.6765	9.41
0.3017	21.1	0.4134	15.4	0.6385	9.97	0.6772	9.40
0.3031	21.0	0.4161	15.3	0.6392	9.96	0.6780	9.39
0.3046	20.9	0.4188	15.2	0.6398	9.95	0.6787	9.38
0.3061	20.8	0.4216	15.1	0.6405	9.94	0.6794	9.37
0.3075	20.7	0.4244	15.0	0.6411	9.93	0.6801	9.36
0.3090	20.6	0.4273	14.9	0.6417	9.92	0.6809	9.35
0.3105	20.5	0.4301	14.8	0.6424	9.91	0.6816	9.34
0.3121	20.4	0.4331	14.7	0.6430	9.90	0.6823	9.33
0.3136	20.3	0.4360	14.6	0.6437	9.89	0.6831	9.32
0.3152	20.2	0.4390	14.5	0.6443	9.88	0.6838	9.31
0.3167	20.1	0.4421	14.4	0.6450	9.87	0.6845	9.30
0.3183	20.0	0.4452	14.3	0.6457	9.86	0.6853	9.29
0.3199	19.9	0.4483	14.2	0.6463	9.85	0.6860	9.28
0.3215	19.8	0.4515	14.1	0.6470	9.84	0.6867	9.27
0.3232	19.7	0.4547	14.0	0.6476	9.83	0.6875	9.26
0.3248	19.6	0.4580	13.9	0.6483	9.82	0.6882	9.25
0.3265	19.5	0.4613	13.8	0.6489	9.81	0.6890	9.24
0.3281	19.4	0.4647	13.7	0.6496	9.80	0.6897	9.23
0.3298	19.3	0.4681	13.6	0.6503	9.79	0.6905	9.22

$\frac{2}{S}$ w km	$\frac{2}{K}$	$\frac{2}{S}$ w km	$\frac{2}{K}$	$\frac{2}{S}$ w km	$\frac{2}{K}$	$\frac{2}{S}$ w km	$\frac{2}{K}$	$\frac{2}{S}$ w km	$\frac{2}{K}$	$\frac{2}{S}$ w km	$\frac{2}{K}$
0.7879	8.08	0.8477	7.51	0.9173	6.94	0.9994	6.37	1.098	5.80	1.217	5.23
0.7889	8.07	0.8488	7.50	0.9186	6.93	1.001	6.36	1.099	5.79	1.220	5.22
0.7898	8.06	0.8500	7.49	0.9200	6.92	1.002	6.35	1.101	5.78	1.222	5.21
0.7908	8.05	0.8511	7.48	0.9213	6.91	1.004	6.34	1.103	5.77	1.224	5.20
0.7918	8.04	0.8522	7.47	0.9226	6.90	1.006	6.33	1.105	5.76	1.227	5.19
0.7928	8.03	0.8534	7.46	0.9240	6.89	1.007	6.32	1.107	5.75	1.229	5.18
0.7938	8.02	0.8545	7.45	0.9253	6.88	1.009	6.31	1.109	5.74	1.231	5.17
0.7948	8.01	0.8557	7.44	0.9267	6.87	1.010	6.30	1.111	5.73	1.234	5.16
0.7958	8.00	0.8568	7.43	0.9280	6.86	1.012	6.29	1.113	5.72	1.236	5.15
0.7968	7.99	0.8580	7.42	0.9294	6.85	1.014	6.28	1.115	5.71	1.238	5.14
0.7978	7.98	0.8591	7.41	0.9307	6.84	1.015	6.27	1.117	5.70	1.241	5.13
0.7988	7.97	0.8603	7.40	0.9321	6.83	1.017	6.26	1.119	5.69	1.243	5.12
0.7998	7.96	0.8615	7.39	0.9335	6.82	1.019	6.25	1.121	5.68	1.246	5.11
0.8008	7.95	0.8626	7.38	0.9348	6.81	1.020	6.24	1.123	5.67	1.248	5.10
0.8018	7.94	0.8638	7.37	0.9362	6.80	1.022	6.23	1.125	5.66	1.251	5.09
0.8028	7.93	0.8650	7.36	0.9376	6.79	1.023	6.22	1.127	5.65	1.253	5.08
0.8038	7.92	0.8661	7.35	0.9390	6.78	1.025	6.21	1.129	5.64	1.256	5.07
0.8048	7.91	0.8673	7.34	0.9403	6.77	1.027	6.20	1.131	5.63	1.258	5.06
0.8058	7.90	0.8685	7.33	0.9417	6.76	1.028	6.19	1.133	5.62	1.261	5.05
0.8069	7.89	0.8697	7.32	0.9431	6.75	1.030	6.18	1.135	5.61	1.263	5.04
0.8079	7.88	0.8709	7.31	0.9445	6.74	1.032	6.17	1.137	5.60	1.266	5.03
0.8089	7.87	0.8721	7.30	0.9459	6.73	1.033	6.16	1.139	5.59	1.268	5.02
0.8099	7.86	0.8733	7.29	0.9473	6.72	1.035	6.15	1.141	5.58	1.271	5.01
0.8110	7.85	0.8745	7.28	0.9488	6.71	1.037	6.14	1.143	5.57	1.273	5.00
0.8120	7.84	0.8757	7.27	0.9502	6.70	1.038	6.13	1.145	5.56	1.276	4.99
0.8130	7.83	0.8769	7.26	0.9516	6.69	1.040	6.12	1.147	5.55	1.278	4.98
0.8141	7.82	0.8781	7.25	0.9530	6.68	1.042	6.11	1.149	5.54	1.281	4.97
0.8151	7.81	0.8793	7.24	0.9544	6.67	1.044	6.10	1.151	5.53	1.283	4.96
0.8162	7.80	0.8805	7.23	0.9559	6.66	1.045	6.09	1.153	5.52	1.286	4.95
0.8172	7.79	0.8817	7.22	0.9573	6.65	1.047	6.08	1.155	5.51	1.289	4.94
0.8183	7.78	0.8830	7.21	0.9588	6.64	1.049	6.07	1.157	5.50	1.291	4.93
0.8193	7.77	0.8842	7.20	0.9602	6.63	1.050	6.06	1.160	5.49	1.294	4.92
0.8204	7.76	0.8854	7.19	0.9617	6.62	1.052	6.05	1.162	5.48	1.297	4.91
0.8214	7.75	0.8867	7.18	0.9631	6.61	1.054	6.04	1.164	5.47	1.299	4.90
0.8225	7.74	0.8879	7.17	0.9646	6.60	1.056	6.03	1.166	5.46	1.302	4.89
0.8236	7.73	0.8891	7.16	0.9660	6.59	1.057	6.02	1.168	5.45	1.304	4.88
0.8246	7.72	0.8904	7.15	0.9675	6.58	1.059	6.01	1.170	5.44	1.307	4.87
0.8257	7.71	0.8916	7.14	0.9690	6.57	1.061	6.00	1.172	5.43	1.310	4.86
0.8268	7.70	0.8929	7.13	0.9705	6.56	1.063	5.99	1.175	5.42	1.313	4.85
0.8278	7.69	0.8941	7.12	0.9719	6.55	1.065	5.98	1.177	5.41	1.315	4.84
0.8289	7.68	0.8954	7.11	0.9734	6.54	1.066	5.97	1.179	5.40	1.318	4.83
0.8300	7.67	0.8966	7.10	0.9749	6.53	1.068	5.96	1.181	5.39	1.321	4.82
0.8311	7.66	0.8979	7.09	0.9764	6.52	1.070	5.95	1.183	5.38	1.323	4.81
0.8322	7.65	0.8992	7.08	0.9779	6.51	1.072	5.94	1.185	5.37	1.326	4.80
0.8333	7.64	0.9004	7.07	0.9794	6.50	1.073	5.93	1.188	5.36	1.329	4.79
0.8344	7.63	0.9017	7.06	0.9809	6.49	1.075	5.92	1.190	5.35	1.332	4.78
0.8355	7.62	0.9030	7.05	0.9824	6.48	1.077	5.91	1.192	5.34	1.335	4.77
0.8366	7.61	0.9043	7.04	0.9840	6.47	1.079	5.90	1.194	5.33	1.337	4.76
0.8377	7.60	0.9056	7.03	0.9855	6.46	1.081	5.89	1.197	5.32	1.340	4.75
0.8388	7.59	0.9069	7.02	0.9870	6.45	1.083	5.88	1.199	5.31	1.343	4.74
0.8399	7.58	0.9082	7.01	0.9885	6.44	1.084	5.87	1.201	5.30	1.346	4.73
0.8410	7.57	0.9095	7.00	0.9901	6.43	1.086	5.86	1.203	5.29	1.349	4.72
0.8421	7.56	0.9108	6.99	0.9916	6.42	1.088	5.85	1.206	5.28	1.352	4.71
0.8432	7.55	0.9121	6.98	0.9932	6.41	1.090	5.84	1.208	5.27	1.354	4.70
0.8443	7.54	0.9134	6.97	0.9947	6.40	1.092	5.83	1.210	5.26	1.357	4.69
0.8454	7.53	0.9147	6.96	0.9963	6.39	1.094	5.82	1.213	5.25	1.360	4.68
0.8466	7.52	0.9160	6.95	0.9978	6.38	1.096	5.81	1.215	5.24	1.363	4.67
0.8477	7.51	0.9173	6.94	0.9994	6.37	1.098	5.80	1.217	5.23	1.366	4.66

$\begin{matrix} S \\ S \\ w \end{matrix}$	$\begin{matrix} K \\ K \\ km \end{matrix}$	$\begin{matrix} S \\ S \\ w \end{matrix}$	$\begin{matrix} K \\ K \\ km \end{matrix}$	$\begin{matrix} S \\ S \\ w \end{matrix}$	$\begin{matrix} K \\ K \\ km \end{matrix}$	$\begin{matrix} S \\ S \\ w \end{matrix}$	$\begin{matrix} K \\ K \\ km \end{matrix}$	$\begin{matrix} S \\ S \\ w \end{matrix}$	$\begin{matrix} K \\ K \\ km \end{matrix}$	$\begin{matrix} S \\ S \\ w \end{matrix}$	$\begin{matrix} K \\ K \\ km \end{matrix}$
1.366	4.66	1.556	4.09	1.809	3.52	2.158	2.95	2.675	2.38	3.517	1.81
1.369	4.65	1.560	4.08	1.814	3.51	2.165	2.94	2.686	2.37	3.537	1.80
1.372	4.64	1.564	4.07	1.819	3.50	2.173	2.93	2.697	2.36	3.556	1.79
1.375	4.63	1.568	4.06	1.824	3.49	2.180	2.92	2.709	2.35	3.576	1.78
1.378	4.62	1.572	4.05	1.829	3.48	2.188	2.91	2.721	2.34	3.597	1.77
1.381	4.61	1.576	4.04	1.835	3.47	2.195	2.90	2.732	2.33	3.617	1.76
1.384	4.60	1.580	4.03	1.840	3.46	2.203	2.89	2.744	2.32	3.638	1.75
1.387	4.59	1.584	4.02	1.845	3.45	2.210	2.88	2.756	2.31	3.659	1.74
1.390	4.58	1.588	4.01	1.851	3.44	2.218	2.87	2.768	2.30	3.680	1.73
1.393	4.57	1.591	4.00	1.856	3.43	2.226	2.86	2.780	2.29	3.701	1.72
1.396	4.56	1.595	3.99	1.861	3.42	2.234	2.85	2.792	2.28	3.723	1.71
1.399	4.55	1.599	3.98	1.867	3.41	2.242	2.84	2.804	2.27	3.745	1.70
1.402	4.54	1.604	3.97	1.872	3.40	2.249	2.83	2.817	2.26	3.767	1.69
1.405	4.53	1.608	3.96	1.878	3.39	2.257	2.82	2.829	2.25	3.789	1.68
1.408	4.52	1.612	3.95	1.883	3.38	2.265	2.81	2.842	2.24	3.812	1.67
1.412	4.51	1.616	3.94	1.889	3.37	2.274	2.80	2.855	2.23	3.835	1.66
1.415	4.50	1.620	3.93	1.895	3.36	2.282	2.79	2.868	2.22	3.858	1.65
1.418	4.49	1.624	3.92	1.900	3.35	2.290	2.78	2.881	2.21	3.882	1.64
1.421	4.48	1.628	3.91	1.906	3.34	2.298	2.77	2.894	2.20	3.906	1.63
1.424	4.47	1.632	3.90	1.912	3.33	2.307	2.76	2.907	2.19	3.930	1.62
1.427	4.46	1.636	3.89	1.917	3.32	2.315	2.75	2.920	2.18	3.954	1.61
1.431	4.45	1.641	3.88	1.923	3.31	2.323	2.74	2.934	2.17	3.979	1.60
1.434	4.44	1.645	3.87	1.929	3.30	2.332	2.73	2.947	2.16	4.004	1.59
1.437	4.43	1.649	3.86	1.935	3.29	2.340	2.72	2.961	2.15	4.029	1.58
1.440	4.42	1.653	3.85	1.941	3.28	2.349	2.71	2.975	2.14	4.055	1.57
1.444	4.41	1.658	3.84	1.947	3.27	2.358	2.70	2.989	2.13	4.081	1.56
1.447	4.40	1.662	3.83	1.953	3.26	2.367	2.69	3.003	2.12	4.107	1.55
1.450	4.39	1.666	3.82	1.959	3.25	2.375	2.68	3.017	2.11	4.134	1.54
1.453	4.38	1.671	3.81	1.965	3.24	2.384	2.67	3.031	2.10	4.161	1.53
1.457	4.37	1.675	3.80	1.971	3.23	2.393	2.66	3.046	2.09	4.188	1.52
1.460	4.36	1.680	3.79	1.977	3.22	2.402	2.65	3.061	2.08	4.216	1.51
1.463	4.35	1.684	3.78	1.983	3.21	2.411	2.64	3.075	2.07	4.244	1.50
1.467	4.34	1.689	3.77	1.989	3.20	2.421	2.63	3.090	2.06	4.273	1.49
1.470	4.33	1.693	3.76	1.996	3.19	2.430	2.62	3.105	2.05	4.301	1.48
1.474	4.32	1.698	3.75	2.002	3.18	2.439	2.61	3.121	2.04	4.331	1.47
1.477	4.31	1.702	3.74	2.008	3.17	2.448	2.60	3.136	2.03	4.360	1.46
1.480	4.30	1.707	3.73	2.015	3.16	2.458	2.59	3.152	2.02	4.390	1.45
1.484	4.29	1.711	3.72	2.021	3.15	2.467	2.58	3.167	2.01	4.421	1.44
1.487	4.28	1.716	3.71	2.027	3.14	2.477	2.57	3.183	2.00	4.452	1.43
1.491	4.27	1.721	3.70	2.034	3.13	2.487	2.56	3.199	1.99	4.483	1.42
1.494	4.26	1.725	3.69	2.040	3.12	2.496	2.55	3.215	1.98	4.515	1.41
1.498	4.25	1.730	3.68	2.047	3.11	2.506	2.54	3.232	1.97	4.547	1.40
1.501	4.24	1.735	3.67	2.054	3.10	2.516	2.53	3.248	1.96	4.580	1.39
1.505	4.23	1.739	3.66	2.060	3.09	2.526	2.52	3.265	1.95	4.613	1.38
1.509	4.22	1.744	3.65	2.067	3.08	2.536	2.51	3.281	1.94	4.647	1.37
1.512	4.21	1.749	3.64	2.074	3.07	2.546	2.50	3.298	1.93	4.681	1.36
1.516	4.20	1.754	3.63	2.080	3.06	2.557	2.49	3.316	1.92	4.716	1.35
1.519	4.19	1.759	3.62	2.087	3.05	2.567	2.48	3.333	1.91	4.751	1.34
1.523	4.18	1.763	3.61	2.094	3.04	2.577	2.47	3.351	1.90	4.787	1.33
1.527	4.17	1.768	3.60	2.101	3.03	2.588	2.46	3.368	1.89	4.823	1.32
1.530	4.16	1.773	3.59	2.108	3.02	2.598	2.45	3.386	1.88	4.860	1.31
1.534	4.15	1.778	3.58	2.115	3.01	2.609	2.44	3.404	1.87	4.897	1.30
1.538	4.14	1.783	3.57	2.122	3.00	2.620	2.43	3.423	1.86	4.935	1.29
1.541	4.13	1.788	3.56	2.129	2.99	2.631	2.42	3.441	1.85	4.974	1.28
1.545	4.12	1.793	3.55	2.136	2.98	2.642	2.41	3.460	1.84	5.013	1.27
1.549	4.11	1.798	3.54	2.143	2.97	2.653	2.40	3.479	1.83	5.052	1.26
1.553	4.10	1.803	3.53	2.151	2.96	2.664	2.39	3.498	1.82	5.093	1.25
1.556	4.09	1.809	3.52	2.158	2.95	2.675	2.38	3.517	1.81	5.134	1.24

$\frac{2}{S}$	$\frac{2}{K}$	$\frac{2}{S}$	$\frac{2}{K}$	$\frac{2}{S}$	$\frac{2}{K}$	$\frac{2}{S}$	$\frac{2}{K}$	$\frac{2}{S}$	$\frac{2}{K}$	$\frac{2}{S}$	$\frac{2}{K}$
w	km	w	km	w	km	w	km	w	km	w	km
5.134	1.24	6.583	0.967	6.996	0.910	7.463	0.853	7.998	0.796	8.615	0.739
5.176	1.23	6.590	0.966	7.003	0.909	7.472	0.852	8.008	0.795	8.626	0.738
5.218	1.22	6.597	0.965	7.011	0.908	7.481	0.851	8.018	0.794	8.638	0.737
5.261	1.21	6.604	0.964	7.019	0.907	7.490	0.850	8.028	0.793	8.650	0.736
5.305	1.20	6.611	0.963	7.027	0.906	7.498	0.849	8.038	0.792	8.661	0.735
5.350	1.19	6.618	0.962	7.034	0.905	7.507	0.848	8.048	0.791	8.673	0.734
5.395	1.18	6.625	0.961	7.042	0.904	7.516	0.847	8.058	0.790	8.685	0.733
5.441	1.17	6.631	0.960	7.050	0.903	7.525	0.846	8.069	0.789	8.697	0.732
5.488	1.16	6.638	0.959	7.058	0.902	7.534	0.845	8.079	0.788	8.709	0.731
5.536	1.15	6.645	0.958	7.066	0.901	7.543	0.844	8.089	0.787	8.721	0.730
5.584	1.14	6.652	0.957	7.073	0.900	7.552	0.843	8.099	0.786	8.733	0.729
5.634	1.13	6.659	0.956	7.081	0.899	7.561	0.842	8.110	0.785	8.745	0.728
5.684	1.12	6.666	0.955	7.089	0.898	7.570	0.841	8.120	0.784	8.757	0.727
5.735	1.11	6.673	0.954	7.097	0.897	7.579	0.840	8.130	0.783	8.769	0.726
5.787	1.10	6.680	0.953	7.105	0.896	7.588	0.839	8.141	0.782	8.781	0.725
5.840	1.09	6.687	0.952	7.113	0.895	7.597	0.838	8.151	0.781	8.793	0.724
5.895	1.08	6.694	0.951	7.121	0.894	7.606	0.837	8.162	0.780	8.805	0.723
5.950	1.07	6.701	0.950	7.129	0.893	7.615	0.836	8.172	0.779	8.817	0.722
6.006	1.06	6.708	0.949	7.137	0.892	7.624	0.835	8.183	0.778	8.830	0.721
6.063	1.05	6.715	0.948	7.145	0.891	7.633	0.834	8.193	0.777	8.842	0.720
6.121	1.04	6.722	0.947	7.153	0.890	7.642	0.833	8.204	0.776	8.854	0.719
6.181	1.03	6.730	0.946	7.161	0.889	7.652	0.832	8.214	0.775	8.867	0.718
6.241	1.02	6.737	0.945	7.169	0.888	7.661	0.831	8.225	0.774	8.879	0.717
6.303	1.01	6.744	0.944	7.177	0.887	7.670	0.830	8.236	0.773	8.891	0.716
6.366	1.00	6.751	0.943	7.185	0.886	7.679	0.829	8.246	0.772	8.904	0.715
6.373	0.999	6.758	0.942	7.193	0.885	7.689	0.828	8.257	0.771	8.916	0.714
6.379	0.998	6.765	0.941	7.202	0.884	7.698	0.827	8.268	0.770	8.929	0.713
6.385	0.997	6.772	0.940	7.210	0.883	7.707	0.826	8.278	0.769	8.941	0.712
6.392	0.996	6.780	0.939	7.218	0.882	7.716	0.825	8.289	0.768	8.954	0.711
6.398	0.995	6.787	0.938	7.226	0.881	7.726	0.824	8.300	0.767	8.966	0.710
6.405	0.994	6.794	0.937	7.234	0.880	7.735	0.823	8.311	0.766	8.979	0.709
6.411	0.993	6.801	0.936	7.242	0.879	7.745	0.822	8.322	0.765	8.992	0.708
6.417	0.992	6.809	0.935	7.251	0.878	7.754	0.821	8.333	0.764	9.004	0.707
6.424	0.991	6.816	0.934	7.259	0.877	7.764	0.820	8.344	0.763	9.017	0.706
6.430	0.990	6.823	0.933	7.267	0.876	7.773	0.819	8.355	0.762	9.030	0.705
6.437	0.989	6.831	0.932	7.276	0.875	7.783	0.818	8.366	0.761	9.043	0.704
6.443	0.988	6.838	0.931	7.284	0.874	7.792	0.817	8.377	0.760	9.056	0.703
6.450	0.987	6.845	0.930	7.292	0.873	7.802	0.816	8.388	0.759	9.069	0.702
6.457	0.986	6.853	0.929	7.301	0.872	7.811	0.815	8.399	0.758	9.082	0.701
6.463	0.985	6.860	0.928	7.309	0.871	7.821	0.814	8.410	0.757	9.095	0.700
6.470	0.984	6.867	0.927	7.317	0.870	7.830	0.813	8.421	0.756	9.108	0.699
6.476	0.983	6.875	0.926	7.326	0.869	7.840	0.812	8.432	0.755	9.121	0.698
6.483	0.982	6.882	0.925	7.334	0.868	7.850	0.811	8.443	0.754	9.134	0.697
6.489	0.981	6.890	0.924	7.343	0.867	7.859	0.810	8.454	0.753	9.147	0.696
6.496	0.980	6.897	0.923	7.351	0.866	7.869	0.809	8.466	0.752	9.160	0.695
6.503	0.979	6.905	0.922	7.360	0.865	7.879	0.808	8.477	0.751	9.173	0.694
6.509	0.978	6.912	0.921	7.368	0.864	7.889	0.807	8.488	0.750	9.186	0.693
6.516	0.977	6.920	0.920	7.377	0.863	7.898	0.806	8.500	0.749	9.200	0.692
6.523	0.976	6.927	0.919	7.385	0.862	7.908	0.805	8.511	0.748	9.213	0.691
6.529	0.975	6.935	0.918	7.394	0.861	7.918	0.804	8.522	0.747	9.226	0.690
6.536	0.974	6.942	0.917	7.403	0.860	7.928	0.803	8.534	0.746	9.240	0.689
6.543	0.973	6.950	0.916	7.411	0.859	7.938	0.802	8.545	0.745	9.253	0.688
6.550	0.972	6.958	0.915	7.420	0.858	7.948	0.801	8.557	0.744	9.267	0.687
6.556	0.971	6.965	0.914	7.428	0.857	7.958	0.800	8.568	0.743	9.280	0.686
6.563	0.970	6.973	0.913	7.437	0.856	7.968	0.799	8.580	0.742	9.294	0.685
6.570	0.969	6.980	0.912	7.446	0.855	7.978	0.798	8.591	0.741	9.307	0.684
6.577	0.968	6.988	0.911	7.455	0.854	7.988	0.797	8.603	0.740	9.321	0.683
6.583	0.967	6.996	0.910	7.463	0.853	7.998	0.796	8.615	0.739	9.335	0.682

$\frac{S}{w}$ <sup>2</sup>	K	$\frac{S}{w}$ <sup>2</sup>	K	$\frac{S}{w}$ <sup>2</sup>	K	$\frac{S}{w}$ <sup>2</sup>	K	$\frac{S}{w}$ <sup>2</sup>	K	$\frac{S}{w}$ <sup>2</sup>	K
9.335	0.682	10.19	0.625	11.21	0.568	12.46	0.511	14.02	0.454	16.04	0.397
9.348	0.681	10.20	0.624	11.23	0.567	12.48	0.510	14.05	0.453	16.08	0.396
9.362	0.680	10.22	0.623	11.25	0.566	12.51	0.509	14.08	0.452	16.12	0.395
9.376	0.679	10.23	0.622	11.27	0.565	12.53	0.508	14.12	0.451	16.16	0.394
9.390	0.678	10.25	0.621	11.29	0.564	12.56	0.507	14.15	0.450	16.20	0.393
9.403	0.677	10.27	0.620	11.31	0.563	12.58	0.506	14.18	0.449	16.24	0.392
9.417	0.676	10.28	0.619	11.33	0.562	12.61	0.505	14.21	0.448	16.28	0.391
9.431	0.675	10.30	0.618	11.35	0.561	12.63	0.504	14.24	0.447	16.32	0.390
9.445	0.674	10.32	0.617	11.37	0.560	12.66	0.503	14.27	0.446	16.36	0.389
9.459	0.673	10.33	0.616	11.39	0.559	12.68	0.502	14.31	0.445	16.41	0.388
9.473	0.672	10.35	0.615	11.41	0.558	12.71	0.501	14.34	0.444	16.45	0.387
9.488	0.671	10.37	0.614	11.43	0.557	12.73	0.500	14.37	0.443	16.49	0.386
9.502	0.670	10.38	0.613	11.45	0.556	12.76	0.499	14.40	0.442	16.53	0.385
9.516	0.669	10.40	0.612	11.47	0.555	12.78	0.498	14.44	0.441	16.58	0.384
9.530	0.668	10.42	0.611	11.49	0.554	12.81	0.497	14.47	0.440	16.62	0.383
9.544	0.667	10.44	0.610	11.51	0.553	12.83	0.496	14.50	0.439	16.66	0.382
9.559	0.666	10.45	0.609	11.53	0.552	12.86	0.495	14.53	0.438	16.71	0.381
9.573	0.665	10.47	0.608	11.55	0.551	12.89	0.494	14.57	0.437	16.75	0.380
9.588	0.664	10.49	0.607	11.57	0.550	12.91	0.493	14.60	0.436	16.80	0.379
9.602	0.663	10.50	0.606	11.60	0.549	12.94	0.492	14.63	0.435	16.84	0.378
9.617	0.662	10.52	0.605	11.62	0.548	12.97	0.491	14.67	0.434	16.89	0.377
9.631	0.661	10.54	0.604	11.64	0.547	12.99	0.490	14.70	0.433	16.93	0.376
9.646	0.660	10.56	0.603	11.66	0.546	13.02	0.489	14.74	0.432	16.98	0.375
9.660	0.659	10.57	0.602	11.68	0.545	13.04	0.488	14.77	0.431	17.02	0.374
9.675	0.658	10.59	0.601	11.70	0.544	13.07	0.487	14.80	0.430	17.07	0.373
9.690	0.657	10.61	0.600	11.72	0.543	13.10	0.486	14.84	0.429	17.11	0.372
9.705	0.656	10.63	0.599	11.75	0.542	13.13	0.485	14.87	0.428	17.16	0.371
9.719	0.655	10.65	0.598	11.77	0.541	13.15	0.484	14.91	0.427	17.21	0.370
9.734	0.654	10.66	0.597	11.79	0.540	13.18	0.483	14.94	0.426	17.25	0.369
9.749	0.653	10.68	0.596	11.81	0.539	13.21	0.482	14.98	0.425	17.30	0.368
9.764	0.652	10.70	0.595	11.83	0.538	13.23	0.481	15.01	0.424	17.35	0.367
9.779	0.651	10.72	0.594	11.85	0.537	13.26	0.480	15.05	0.423	17.39	0.366
9.794	0.650	10.73	0.593	11.88	0.536	13.29	0.479	15.09	0.422	17.44	0.365
9.809	0.649	10.75	0.592	11.90	0.535	13.32	0.478	15.12	0.421	17.49	0.364
9.824	0.648	10.77	0.591	11.92	0.534	13.35	0.477	15.16	0.420	17.54	0.363
9.840	0.647	10.79	0.590	11.94	0.533	13.37	0.476	15.19	0.419	17.59	0.362
9.855	0.646	10.81	0.589	11.97	0.532	13.40	0.475	15.23	0.418	17.63	0.361
9.870	0.645	10.83	0.588	11.99	0.531	13.43	0.474	15.27	0.417	17.68	0.360
9.885	0.644	10.84	0.587	12.01	0.530	13.46	0.473	15.30	0.416	17.73	0.359
9.901	0.643	10.86	0.586	12.03	0.529	13.49	0.472	15.34	0.415	17.78	0.358
9.916	0.642	10.88	0.585	12.06	0.528	13.52	0.471	15.38	0.414	17.83	0.357
9.932	0.641	10.90	0.584	12.08	0.527	13.54	0.470	15.41	0.413	17.88	0.356
9.947	0.640	10.92	0.583	12.10	0.526	13.57	0.469	15.45	0.412	17.93	0.355
9.963	0.639	10.94	0.582	12.13	0.525	13.60	0.468	15.49	0.411	17.98	0.354
9.978	0.638	10.96	0.581	12.15	0.524	13.63	0.467	15.53	0.410	18.03	0.353
9.994	0.637	10.98	0.580	12.17	0.523	13.66	0.466	15.56	0.409	18.09	0.352
10.01	0.636	10.99	0.579	12.20	0.522	13.69	0.465	15.60	0.408	18.14	0.351
10.02	0.635	11.01	0.578	12.22	0.521	13.72	0.464	15.64	0.407	18.19	0.350
10.04	0.634	11.03	0.577	12.24	0.520	13.75	0.463	15.68	0.406	18.24	0.349
10.06	0.633	11.05	0.576	12.27	0.519	13.78	0.462	15.72	0.405	18.29	0.348
10.07	0.632	11.07	0.575	12.29	0.518	13.81	0.461	15.76	0.404	18.35	0.347
10.09	0.631	11.09	0.574	12.31	0.517	13.84	0.460	15.80	0.403	18.40	0.346
10.10	0.630	11.11	0.573	12.34	0.516	13.87	0.459	15.84	0.402	18.45	0.345
10.12	0.629	11.13	0.572	12.36	0.515	13.90	0.458	15.88	0.401	18.51	0.344
10.14	0.628	11.15	0.571	12.38	0.514	13.93	0.457	15.91	0.400	18.56	0.343
10.15	0.627	11.17	0.570	12.41	0.513	13.96	0.456	15.95	0.399	18.61	0.342
10.17	0.626	11.19	0.569	12.43	0.512	13.99	0.455	15.99	0.398	18.67	0.341
10.19	0.625	11.21	0.568	12.46	0.511	14.02	0.454	16.04	0.397	18.72	0.340

$\frac{S}{K}$ w km	$\frac{S}{K}$	$\frac{S}{K}$	$\frac{S}{K}$ w km	$\frac{S}{K}$	$\frac{S}{K}$	$\frac{S}{K}$ w km	$\frac{S}{K}$	$\frac{S}{K}$	$\frac{S}{K}$ w km	$\frac{S}{K}$	$\frac{S}{K}$	$\frac{S}{K}$ w km	$\frac{S}{K}$	$\frac{S}{K}$	$\frac{S}{K}$ w km	$\frac{S}{K}$	$\frac{S}{K}$	$\frac{S}{K}$ w km
18.72	0.340	22.49	0.283	28.17	0.226	37.67	0.169	56.84	0.112	66.66	0.0955							
18.78	0.339	22.57	0.282	28.29	0.225	37.89	0.168	57.35	0.111	66.73	0.0954							
18.83	0.338	22.65	0.281	28.42	0.224	38.12	0.167	57.87	0.110	66.80	0.0953							
18.89	0.337	22.74	0.280	28.55	0.223	38.35	0.166	58.40	0.109	66.87	0.0952							
18.95	0.336	22.82	0.279	28.68	0.222	38.58	0.165	58.95	0.108	66.94	0.0951							
19.00	0.335	22.90	0.278	28.81	0.221	38.82	0.164	59.50	0.107	67.01	0.0950							
19.06	0.334	22.98	0.277	28.94	0.220	39.06	0.163	60.06	0.106	67.08	0.0949							
19.12	0.333	23.07	0.276	29.07	0.219	39.30	0.162	60.63	0.105	67.15	0.0948							
19.17	0.332	23.15	0.275	29.20	0.218	39.54	0.161	61.21	0.104	67.22	0.0947							
19.23	0.331	23.23	0.274	29.34	0.217	39.79	0.160	61.81	0.103	67.30	0.0946							
19.29	0.330	23.32	0.273	29.47	0.216	40.04	0.159	62.41	0.102	67.37	0.0945							
19.35	0.329	23.40	0.272	29.61	0.215	40.29	0.158	63.03	0.101	67.44	0.0944							
19.41	0.328	23.49	0.271	29.75	0.214	40.55	0.157	63.66	0.100	67.51	0.0943							
19.47	0.327	23.58	0.270	29.89	0.213	40.81	0.156	63.73	0.0999	67.58	0.0942							
19.53	0.326	23.67	0.269	30.03	0.212	41.07	0.155	63.79	0.0998	67.65	0.0941							
19.59	0.325	23.75	0.268	30.17	0.211	41.34	0.154	63.85	0.0997	67.72	0.0940							
19.65	0.324	23.84	0.267	30.31	0.210	41.61	0.153	63.92	0.0996	67.80	0.0939							
19.71	0.323	23.93	0.266	30.46	0.209	41.88	0.152	63.98	0.0995	67.87	0.0938							
19.77	0.322	24.02	0.265	30.61	0.208	42.16	0.151	64.05	0.0994	67.94	0.0937							
19.83	0.321	24.11	0.264	30.75	0.207	42.44	0.150	64.11	0.0993	68.01	0.0936							
19.89	0.320	24.21	0.263	30.90	0.206	42.73	0.149	64.17	0.0992	68.09	0.0935							
19.96	0.319	24.30	0.262	31.05	0.205	43.01	0.148	64.24	0.0991	68.16	0.0934							
20.02	0.318	24.39	0.261	31.21	0.204	43.31	0.147	64.30	0.0990	68.23	0.0933							
20.08	0.317	24.48	0.260	31.36	0.203	43.60	0.146	64.37	0.0989	68.31	0.0932							
20.15	0.316	24.58	0.259	31.52	0.202	43.90	0.145	64.43	0.0988	68.38	0.0931							
20.21	0.315	24.67	0.258	31.67	0.201	44.21	0.144	64.50	0.0987	68.45	0.0930							
20.27	0.314	24.77	0.257	31.83	0.200	44.52	0.143	64.57	0.0986	68.53	0.0929							
20.34	0.313	24.87	0.256	31.99	0.199	44.83	0.142	64.63	0.0985	68.60	0.0928							
20.40	0.312	24.96	0.255	32.15	0.198	45.15	0.141	64.70	0.0984	68.67	0.0927							
20.47	0.311	25.06	0.254	32.32	0.197	45.47	0.140	64.76	0.0983	68.75	0.0926							
20.54	0.310	25.16	0.253	32.48	0.196	45.80	0.139	64.83	0.0982	68.82	0.0925							
20.60	0.309	25.26	0.252	32.65	0.195	46.13	0.138	64.89	0.0981	68.90	0.0924							
20.67	0.308	25.36	0.251	32.81	0.194	46.47	0.137	64.96	0.0980	68.97	0.0923							
20.74	0.307	25.46	0.250	32.98	0.193	46.81	0.136	65.03	0.0979	69.05	0.0922							
20.80	0.306	25.57	0.249	33.16	0.192	47.16	0.135	65.09	0.0978	69.12	0.0921							
20.87	0.305	25.67	0.248	33.33	0.191	47.51	0.134	65.16	0.0977	69.20	0.0920							
20.94	0.304	25.77	0.247	33.51	0.190	47.87	0.133	65.23	0.0976	69.27	0.0919							
21.01	0.303	25.88	0.246	33.68	0.189	48.23	0.132	65.29	0.0975	69.35	0.0918							
21.08	0.302	25.98	0.245	33.86	0.188	48.60	0.131	65.36	0.0974	69.42	0.0917							
21.15	0.301	26.09	0.244	34.04	0.187	48.97	0.130	65.43	0.0973	69.50	0.0916							
21.22	0.300	26.20	0.243	34.23	0.186	49.35	0.129	65.50	0.0972	69.58	0.0915							
21.29	0.299	26.31	0.242	34.41	0.185	49.74	0.128	65.56	0.0971	69.65	0.0914							
21.36	0.298	26.42	0.241	34.60	0.184	50.13	0.127	65.63	0.0970	69.73	0.0913							
21.43	0.297	26.53	0.240	34.79	0.183	50.52	0.126	65.70	0.0969	69.80	0.0912							
21.51	0.296	26.64	0.239	34.98	0.182	50.93	0.125	65.77	0.0968	69.88	0.0911							
21.58	0.295	26.75	0.238	35.17	0.181	51.34	0.124	65.83	0.0967	69.96	0.0910							
21.65	0.294	26.86	0.237	35.37	0.180	51.76	0.123	65.90	0.0966	70.03	0.0909							
21.73	0.293	26.97	0.236	35.56	0.179	52.18	0.122	65.97	0.0965	70.11	0.0908							
21.80	0.292	27.09	0.235	35.76	0.178	52.61	0.121	66.04	0.0964	70.19	0.0907							
21.88	0.291	27.21	0.234	35.97	0.177	53.05	0.120	66.11	0.0963	70.27	0.0906							
21.95	0.290	27.32	0.233	36.17	0.176	53.50	0.119	66.18	0.0962	70.34	0.0905							
22.03	0.289	27.44	0.232	36.38	0.175	53.95	0.118	66.25	0.0961	70.42	0.0904							
22.10	0.288	27.56	0.231	36.59	0.174	54.41	0.117	66.31	0.0960	70.50	0.0903							
22.18	0.287	27.68	0.230	36.80	0.173	54.88	0.116	66.38	0.0959	70.58	0.0902							
22.26	0.286	27.80	0.229	37.01	0.172	55.36	0.115	66.45	0.0958	70.66	0.0901							
22.34	0.285	27.92	0.228	37.23	0.171	55.84	0.114	66.52	0.0957	70.73	0.0900							
22.42	0.284	28.04	0.227	37.45	0.170	56.34	0.113	66.59	0.0956	70.81	0.0899							
22.49	0.283	28.17	0.226	37.67	0.169	56.84	0.112	66.66	0.0955	70.89	0.0898							



$S^2$ w km	K	$S^2$ w km	K	$S^2$ w km	K	$S^2$ w km	K	$S^2$ w km	K	$S^2$ w km	K
70.89	0.0898	75.70	0.0841	81.20	0.0784	87.57	0.0727	95.02	0.0670	103.8	0.0613
70.97	0.0897	75.79	0.0840	81.30	0.0783	87.69	0.0726	95.16	0.0669	104.0	0.0612
71.05	0.0896	75.88	0.0839	81.41	0.0782	87.81	0.0725	95.30	0.0668	104.2	0.0611
71.13	0.0895	75.97	0.0838	81.51	0.0781	87.93	0.0724	95.44	0.0667	104.4	0.0610
71.21	0.0894	76.06	0.0837	81.62	0.0780	88.05	0.0723	95.59	0.0666	104.5	0.0609
71.29	0.0893	76.15	0.0836	81.72	0.0779	88.17	0.0722	95.73	0.0665	104.7	0.0608
71.37	0.0892	76.24	0.0835	81.83	0.0778	88.30	0.0721	95.88	0.0664	104.9	0.0607
71.45	0.0891	76.33	0.0834	81.93	0.0777	88.42	0.0720	96.02	0.0663	105.0	0.0606
71.53	0.0890	76.42	0.0833	82.04	0.0776	88.54	0.0719	96.17	0.0662	105.2	0.0605
71.61	0.0889	76.52	0.0832	82.14	0.0775	88.67	0.0718	96.31	0.0661	105.4	0.0604
71.69	0.0888	76.61	0.0831	82.25	0.0774	88.79	0.0717	96.46	0.0660	105.6	0.0603
71.77	0.0887	76.70	0.0830	82.36	0.0773	88.91	0.0716	96.60	0.0659	105.7	0.0602
71.85	0.0886	76.79	0.0829	82.46	0.0772	89.04	0.0715	96.75	0.0658	105.9	0.0601
71.93	0.0885	76.89	0.0828	82.57	0.0771	89.16	0.0714	96.90	0.0657	106.1	0.0600
72.02	0.0884	76.98	0.0827	82.68	0.0770	89.29	0.0713	97.05	0.0656	106.3	0.0599
72.10	0.0883	77.07	0.0826	82.78	0.0769	89.41	0.0712	97.19	0.0655	106.5	0.0598
72.18	0.0882	77.16	0.0825	82.89	0.0768	89.54	0.0711	97.34	0.0654	106.6	0.0597
72.26	0.0881	77.26	0.0824	83.00	0.0767	89.66	0.0710	97.49	0.0653	106.8	0.0596
72.34	0.0880	77.35	0.0823	83.11	0.0766	89.79	0.0709	97.64	0.0652	107.0	0.0595
72.42	0.0879	77.45	0.0822	83.22	0.0765	89.92	0.0708	97.79	0.0651	107.2	0.0594
72.51	0.0878	77.54	0.0821	83.33	0.0764	90.04	0.0707	97.94	0.0650	107.3	0.0593
72.59	0.0877	77.64	0.0820	83.44	0.0763	90.17	0.0706	98.09	0.0649	107.5	0.0592
72.67	0.0876	77.73	0.0819	83.55	0.0762	90.30	0.0705	98.24	0.0648	107.7	0.0591
72.76	0.0875	77.83	0.0818	83.66	0.0761	90.43	0.0704	98.40	0.0647	107.9	0.0590
72.84	0.0874	77.92	0.0817	83.77	0.0760	90.56	0.0703	98.55	0.0646	108.1	0.0589
72.92	0.0873	78.02	0.0816	83.88	0.0759	90.69	0.0702	98.70	0.0645	108.3	0.0588
73.01	0.0872	78.11	0.0815	83.99	0.0758	90.82	0.0701	98.85	0.0644	108.4	0.0587
73.09	0.0871	78.21	0.0814	84.10	0.0757	90.95	0.0700	99.01	0.0643	108.6	0.0586
73.17	0.0870	78.30	0.0813	84.21	0.0756	91.08	0.0699	99.16	0.0642	108.8	0.0585
73.26	0.0869	78.40	0.0812	84.32	0.0755	91.21	0.0698	99.32	0.0641	109.0	0.0584
73.34	0.0868	78.50	0.0811	84.43	0.0754	91.34	0.0697	99.47	0.0640	109.2	0.0583
73.43	0.0867	78.59	0.0810	84.54	0.0753	91.47	0.0696	99.63	0.0639	109.4	0.0582
73.51	0.0866	78.69	0.0809	84.66	0.0752	91.60	0.0695	99.78	0.0638	109.6	0.0581
73.60	0.0865	78.79	0.0808	84.77	0.0751	91.73	0.0694	99.94	0.0637	109.8	0.0580
73.68	0.0864	78.89	0.0807	84.88	0.0750	91.86	0.0693	100.1	0.0636	109.9	0.0579
73.77	0.0863	78.98	0.0806	85.00	0.0749	92.00	0.0692	100.2	0.0635	110.1	0.0578
73.85	0.0862	79.08	0.0805	85.11	0.0748	92.13	0.0691	100.4	0.0634	110.3	0.0577
73.94	0.0861	79.18	0.0804	85.22	0.0747	92.26	0.0690	100.6	0.0633	110.5	0.0576
74.03	0.0860	79.28	0.0803	85.34	0.0746	92.40	0.0689	100.7	0.0632	110.7	0.0575
74.11	0.0859	79.38	0.0802	85.45	0.0745	92.53	0.0688	100.9	0.0631	110.9	0.0574
74.20	0.0858	79.48	0.0801	85.57	0.0744	92.67	0.0687	101.0	0.0630	111.1	0.0573
74.28	0.0857	79.58	0.0800	85.68	0.0743	92.80	0.0686	101.2	0.0629	111.3	0.0572
74.37	0.0856	79.68	0.0799	85.80	0.0742	92.94	0.0685	101.4	0.0628	111.5	0.0571
74.46	0.0855	79.78	0.0798	85.91	0.0741	93.07	0.0684	101.5	0.0627	111.7	0.0570
74.55	0.0854	79.88	0.0797	86.03	0.0740	93.21	0.0683	101.7	0.0626	111.9	0.0569
74.63	0.0853	79.98	0.0796	86.15	0.0739	93.35	0.0682	101.9	0.0625	112.1	0.0568
74.72	0.0852	80.08	0.0795	86.26	0.0738	93.48	0.0681	102.0	0.0624	112.3	0.0567
74.81	0.0851	80.18	0.0794	86.38	0.0737	93.62	0.0680	102.2	0.0623	112.5	0.0566
74.90	0.0850	80.28	0.0793	86.50	0.0736	93.76	0.0679	102.3	0.0622	112.7	0.0565
74.98	0.0849	80.38	0.0792	86.61	0.0735	93.90	0.0678	102.5	0.0621	112.9	0.0564
75.07	0.0848	80.48	0.0791	86.73	0.0734	94.03	0.0677	102.7	0.0620	113.1	0.0563
75.16	0.0847	80.58	0.0790	86.85	0.0733	94.17	0.0676	102.8	0.0619	113.3	0.0562
75.25	0.0846	80.69	0.0789	86.97	0.0732	94.31	0.0675	103.0	0.0618	113.5	0.0561
75.34	0.0845	80.79	0.0788	87.09	0.0731	94.45	0.0674	103.2	0.0617	113.7	0.0560
75.43	0.0844	80.89	0.0787	87.21	0.0730	94.59	0.0673	103.3	0.0616	113.9	0.0559
75.52	0.0843	80.99	0.0786	87.33	0.0729	94.73	0.0672	103.5	0.0615	114.1	0.0558
75.61	0.0842	81.10	0.0785	87.45	0.0728	94.88	0.0671	103.7	0.0614	114.3	0.0557
75.70	0.0841	81.20	0.0784	87.57	0.0727	95.02	0.0670	103.8	0.0613	114.5	0.0556

$\begin{matrix} 2 \\ S \\ K \\ w \text{ km} \end{matrix}$	$\begin{matrix} 2 \\ S \\ K \\ w \text{ km} \end{matrix}$	$\begin{matrix} 2 \\ S \\ K \\ w \text{ km} \end{matrix}$	$\begin{matrix} 2 \\ S \\ K \\ w \text{ km} \end{matrix}$	$\begin{matrix} 2 \\ S \\ K \\ w \text{ km} \end{matrix}$	$\begin{matrix} 2 \\ S \\ K \\ w \text{ km} \end{matrix}$
114.5	0.0556	127.6	0.0499	144.0	0.0442
114.7	0.0555	127.8	0.0498	144.4	0.0441
114.9	0.0554	128.1	0.0497	144.7	0.0440
115.1	0.0553	128.3	0.0496	145.0	0.0439
115.3	0.0552	128.6	0.0495	145.3	0.0438
115.5	0.0551	128.9	0.0494	145.7	0.0437
115.7	0.0550	129.1	0.0493	146.0	0.0436
116.0	0.0549	129.4	0.0492	146.3	0.0435
116.2	0.0548	129.7	0.0491	146.7	0.0434
116.4	0.0547	129.9	0.0490	147.0	0.0433
116.6	0.0546	130.2	0.0489	147.4	0.0432
116.8	0.0545	130.4	0.0488	147.7	0.0431
117.0	0.0544	130.7	0.0487	148.0	0.0430
117.2	0.0543	131.0	0.0486	148.4	0.0429
117.5	0.0542	131.3	0.0485	148.7	0.0428
117.7	0.0541	131.5	0.0484	149.1	0.0427
117.9	0.0540	131.8	0.0483	149.4	0.0426
118.1	0.0539	132.1	0.0482	149.8	0.0425
118.3	0.0538	132.3	0.0481	150.1	0.0424
118.5	0.0537	132.6	0.0480	150.5	0.0423
118.8	0.0536	132.9	0.0479	150.9	0.0422
119.0	0.0535	133.2	0.0478	151.2	0.0421
119.2	0.0534	133.5	0.0477	151.6	0.0420
119.4	0.0533	133.7	0.0476	151.9	0.0419
119.7	0.0532	134.0	0.0475	152.3	0.0418
119.9	0.0531	134.3	0.0474	152.7	0.0417
120.1	0.0530	134.6	0.0473	153.0	0.0416
120.3	0.0529	134.9	0.0472	153.4	0.0415
120.6	0.0528	135.2	0.0471	153.8	0.0414
120.8	0.0527	135.4	0.0470	154.1	0.0413
121.0	0.0526	135.7	0.0469	154.5	0.0412
121.3	0.0525	136.0	0.0468	154.9	0.0411
121.5	0.0524	136.3	0.0467	155.3	0.0410
121.7	0.0523	136.6	0.0466	155.6	0.0409
122.0	0.0522	136.9	0.0465	156.0	0.0408
122.2	0.0521	137.2	0.0464	156.4	0.0407
122.4	0.0520	137.5	0.0463	156.8	0.0406
122.7	0.0519	137.8	0.0462	157.2	0.0405
122.9	0.0518	138.1	0.0461	157.6	0.0404
123.1	0.0517	138.4	0.0460	158.0	0.0403
123.4	0.0516	138.7	0.0459	158.4	0.0402
123.6	0.0515	139.0	0.0458	158.8	0.0401
123.8	0.0514	139.3	0.0457	159.1	0.0400
124.1	0.0513	139.6	0.0456	159.5	0.0399
124.3	0.0512	139.9	0.0455	159.9	0.0398
124.6	0.0511	140.2	0.0454	160.4	0.0397
124.8	0.0510	140.5	0.0453	160.8	0.0396
125.1	0.0509	140.8	0.0452	161.2	0.0395
125.3	0.0508	141.2	0.0451	161.6	0.0394
125.6	0.0507	141.5	0.0450	162.0	0.0393
125.8	0.0506	141.8	0.0449	162.4	0.0392
126.1	0.0505	142.1	0.0448	162.8	0.0391
126.3	0.0504	142.4	0.0447	163.2	0.0390
126.6	0.0503	142.7	0.0446	163.6	0.0389
126.8	0.0502	143.1	0.0445	164.1	0.0388
127.1	0.0501	143.4	0.0444	164.5	0.0387
127.3	0.0500	143.7	0.0443	164.9	0.0386
127.6	0.0499	144.0	0.0442	165.3	0.0385
165.3	0.0385	194.1	0.0328	234.9	0.0271
165.8	0.0384	194.7	0.0327	235.8	0.0270
166.2	0.0383	195.3	0.0326	236.7	0.0269
166.6	0.0382	195.9	0.0325	237.5	0.0268
167.1	0.0381	196.5	0.0324	238.4	0.0267
167.5	0.0380	197.1	0.0323	239.3	0.0266
168.0	0.0379	197.7	0.0322	240.2	0.0265
168.4	0.0378	198.3	0.0321	241.1	0.0264
168.9	0.0377	198.9	0.0320	242.1	0.0263
169.3	0.0376	199.6	0.0319	243.0	0.0262
169.8	0.0375	200.2	0.0318	243.9	0.0261
170.2	0.0374	200.8	0.0317	244.8	0.0260
170.7	0.0373	201.5	0.0316	245.8	0.0259
171.1	0.0372	202.1	0.0315	246.7	0.0258
171.6	0.0371	202.7	0.0314	247.7	0.0257
172.1	0.0370	203.4	0.0313	248.7	0.0256
172.5	0.0369	204.0	0.0312	249.6	0.0255
173.0	0.0368	204.7	0.0311	250.6	0.0254
173.5	0.0367	205.4	0.0310	251.6	0.0253
173.9	0.0366	206.0	0.0309	252.6	0.0252
174.4	0.0365	206.7	0.0308	253.6	0.0251
174.9	0.0364	207.4	0.0307	254.6	0.0250
175.4	0.0363	208.0	0.0306	255.7	0.0249
175.9	0.0362	208.7	0.0305	256.7	0.0248
176.3	0.0361	209.4	0.0304	257.7	0.0247
176.8	0.0360	210.1	0.0303	258.8	0.0246
177.3	0.0359	210.8	0.0302	259.8	0.0245
177.8	0.0358	211.5	0.0301	260.9	0.0244
178.3	0.0357	212.2	0.0300	262.0	0.0243
178.8	0.0356	212.9	0.0299	263.1	0.0242
179.3	0.0355	213.6	0.0298	264.2	0.0241
179.8	0.0354	214.3	0.0297	265.3	0.0240
180.3	0.0353	215.1	0.0296	266.4	0.0239
180.9	0.0352	215.8	0.0295	267.5	0.0238
181.4	0.0351	216.5	0.0294	268.6	0.0237
181.9	0.0350	217.3	0.0293	269.7	0.0236
182.4	0.0349	218.0	0.0292	270.9	0.0235
182.9	0.0348	218.8	0.0291	272.1	0.0234
183.5	0.0347	219.5	0.0290	273.2	0.0233
184.0	0.0346	220.3	0.0289	274.4	0.0232
184.5	0.0345	221.0	0.0288	275.6	0.0231
185.1	0.0344	221.8	0.0287	276.8	0.0230
185.6	0.0343	222.6	0.0286	278.0	0.0229
186.1	0.0342	223.4	0.0285	279.2	0.0228
186.7	0.0341	224.2	0.0284	280.4	0.0227
187.2	0.0340	224.9	0.0283	281.7	0.0226
187.8	0.0339	225.7	0.0282	282.9	0.0225
188.3	0.0338	226.5	0.0281	284.2	0.0224
188.9	0.0337	227.4	0.0280	285.5	0.0223
189.5	0.0336	228.2	0.0279	286.8	0.0222
190.0	0.0335	229.0	0.0278	288.1	0.0221
190.6	0.0334	229.8	0.0277	289.4	0.0220
191.2	0.0333	230.7	0.0276	290.7	0.0219
191.7	0.0332	231.5	0.0275	292.0	0.0218
192.3	0.0331	232.3	0.0274	293.4	0.0217
192.9	0.0330	233.2	0.0273	294.7	0.0216
193.5	0.0329	234.0	0.0272	296.1	0.0215
194.1	0.0328	234.9	0.0271	297.5	0.0214

## SPIS TREŚCI

JULIAN RADECKI

Koncepcja wyznaczenia różnicy długości geograficznych pomiędzy wyjściowymi punktami astronomiczno - geodezyjnymi Polski i krajów sąsiednich . . . . . 3

JERZY GAŻDZICKI

Wpływ nawiązań kątowych na zmniejszenie błędów podłużnych punktów typowego ciągu poligonowego . . . . . 19

STANISŁAW CIOTA

Radziecki niwelator NS-2 (Opis i wyniki badania polowego) . . . . . 39

TADEUSZ WYRZYKOWSKI

Automatyczny niwelator Zeiss Ni 2 (opis i wyniki badania polowego) . . . . . 53

KAZIMIERZ NAPIERKOWSKI

Tablice do obliczania współczynników kierunkowych w układzie gradowym . . . . . 75

## СОДЕРЖАНИЕ

ЮЛИАН РАДЕЦКИ

Идея определения разности географических долгот между исходными астрономо-геодезическими пунктами Польши и соседних стран . . . . . 15

ЕЖИ ГАЗДЗИЦКИ

Влияние угловых привязок на уменьшение продольных невязок в типовом полигонном ходе . . . . . 34

СТАНИСЛАВ ЦИОТА

Советский нивелир НС-2 . . . . . 50

ТАДЕУШ ВЫЖИКОВСКИ

Автоматический нивелир Цейсс Ni-2 . . . . . 71

## CONTENS

JULIAN RADECKI

A conception of the determination of the difference in geographical longitude between astronomic geodetic points of Poland and the neighbouring countries . . . . . 17

JERZY GAŻDZICKI

The influence of angular connection upon the reduction of longitudinal errors of points of a typical polygonal traverse ..... 36

STANISŁAW CIOTA

The Soviet-made NS-2 level ..... 51

ŁADEUSZ WYRZYKOWSKI

Zeiss Ni 2 automatic level ..... 73

