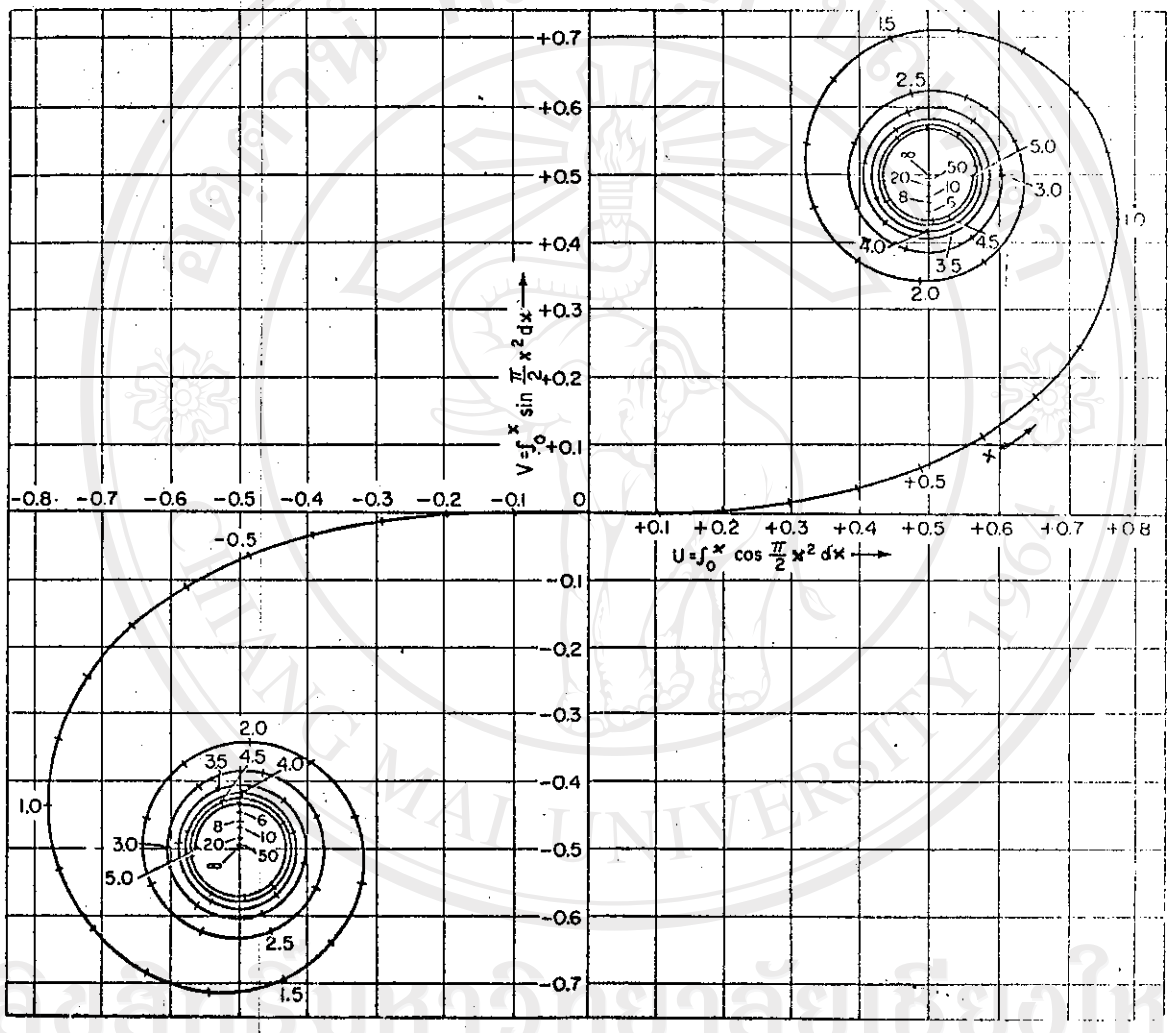
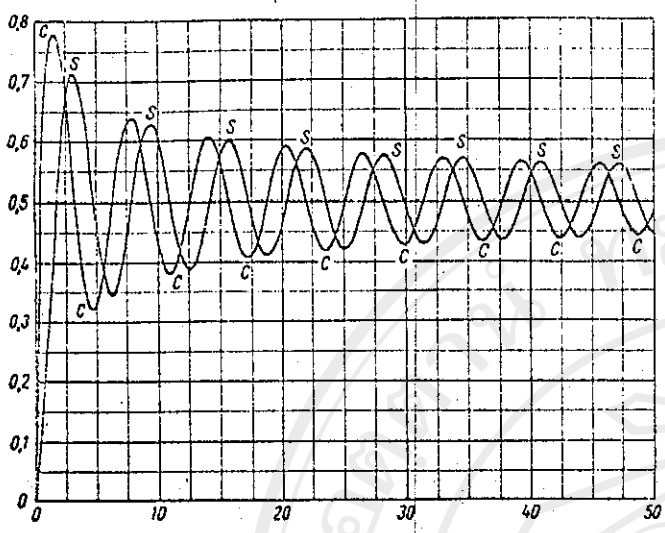
ภาคผนวกที่ 1

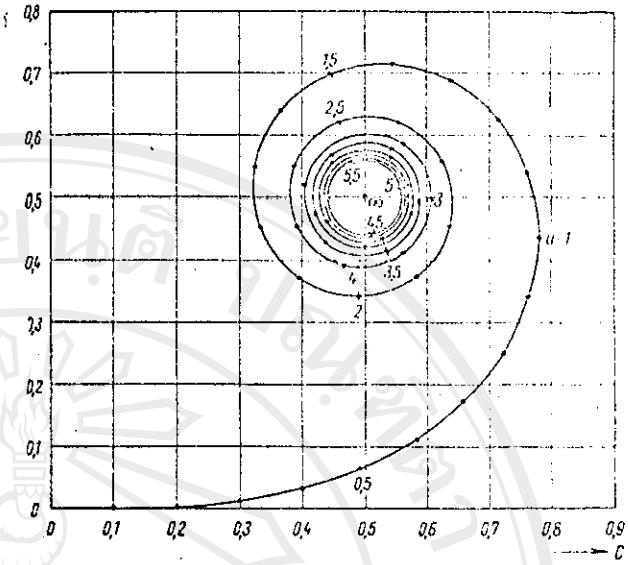
The Cornu's spiral



ภาคผนวกที่ 1



The Fresnel integrals $C(x)$, $S(x)$



The Cornu spiral $C = C\left(\frac{\pi}{2}u^2\right)$, $S = S\left(\frac{\pi}{2}u^2\right)$

The Fresnel Integrals $C\left(\frac{\pi}{2}x^2\right)$, $S\left(\frac{\pi}{2}x^2\right)$

x	$C\left(\frac{\pi}{2}x^2\right)$	$S\left(\frac{\pi}{2}x^2\right)$	x	$C\left(\frac{\pi}{2}x^2\right)$	$S\left(\frac{\pi}{2}x^2\right)$	x	$C\left(\frac{\pi}{2}x^2\right)$	$S\left(\frac{\pi}{2}x^2\right)$
	0,	0,		0,	0,		0,	0,
0,00	0000 + 100	0000 0	1,25	6801 — 63	6587 — 76	2,50	4574 + 12	6192 29
05	0500 100	0001 + 4	30	6386 48	6863 91	52	4396 17	6101 27
10	1000 100	0005 8	35	5923 30	7050 102	54	4235 21	5983 24
15	1500 99,8	0018 12	40	5431 — 7	7135 110	56	4094 25	5842 21
20	1999 99,8	0042 16	45	4933 + 18	7111 113	58	3978 28	5679 17
0,25	2498 + 99,2	0082 + 20	1,50	4453 + 45	6975 — 110	2,60	3889 30	5500 12
30	2994 98,6	0141 23	55	4018 72	6731 99	62	3831 32	5309 7
35	3487 97,6	0224 27	60	3655 97	6389 81	64	3805 33	5111 2
40	3975 96	0334 30	65	3388 118	5968 55	66	3812 33	4911 4
45	4455 93,6	0474 34	70	3238 132	5492 — 23	68	3853 32	4715 10
0,50	4923 — 15	0647 + 36	1,75	3219 + 138	4994 + 13	2,70	3925 + 31	4529 15
55	5377 20	0857 38	80	3336 133	4509 52	72	4028 28	4356 20
60	5811 25	1105 40	85	3584 116	4077 90	74	4158 24	4207 25
65	6219 31	1393 40	90	3945 87	3733 123	76	4313 20	4080 29
70	6597 38	1721 40	95	4391 + 48	3511 147	78	4487 15	3982 32
0,75	6935 — 46	2089 + 38	2,00	4883 0	3434 + 159	2,80	4675 + 9	3915 34
80	7228 53	2493 34	05	5374 — 51	3513 155	82	4872 + 3	3883 35
85	7469 61	2932 28	10	5816 100	3743 134	84	5072 — 4	3886 36
90	7648 68	3398 21	15	6159 141	4103 96	86	5268 10	3924 35
95	7760 74	3885 + 12	20	6363 169	4557 + 44	88	5454 16	3996 33
1,00	7799 — 79	4383 0	2,25	6401 — 178	5053 — 17	2,90	5624 — 22	4101 29
05	7759 82	4880 — 13	30	6266 164	5532 80	92	5772 27	4235 25
10	7638 82	5365 28	35	5970 128	5931 137	94	5893 31	4394 20
15	7436 79	5821 44	40	5550 — 71	6197 178	96	5983 35	4572 14
20	7154 73	6234 60	45	5061 0	6289 195	98	6038 37	4764 7
1,25	6801 — 63	6587 — 76	2,50	4574 + 76	6192 — 184	3,00	6057 — 38	4963 0
	0,	0,		0,	0,		0,	0,

The Fresnel Integrals $C\left(\frac{\pi}{2}x^2\right), S\left(\frac{\pi}{2}x^2\right)$

x	$C\left(\frac{\pi}{2}x^2\right)$		$S\left(\frac{\pi}{2}x^2\right)$		x	$C\left(\frac{\pi}{2}x^2\right)$		$S\left(\frac{\pi}{2}x^2\right)$		x	$C\left(\frac{\pi}{2}x^2\right)$	$S\left(\frac{\pi}{2}x^2\right)$
	0,		0,			0,		0,			0,	0,
3,00	6057	— 38	4963	0	4,00	4984	0	4205	+ 51	5,0	5636	4992
02	6038	37	5162	— 7	02	5182	— 13	4230	49	1	4998	5624
04	5982	36	5354	14	04	5368	25	4304	45	2	4339	4969
06	5891	32	5531	21	06	5528	35	4422	37	3	5078	4405
08	5767	28	5688	27	08	5654	44	4576	27	4	5572	5140
3,10	5616	— 22	5818	— 32	4,10	5737	— 50	4758	+ 15	5,5	4784	5537
12	5442	16	5917	36	12	5771	52	4955	+ 2	6	4517	4700
14	5253	9	5979	39	14	5753	51	5153	— 11	7	5385	4595
16	5054	— 1	6003	40	16	5684	47	5341	24	8	5298	5460
18	4855	+ 7	5988	39	18	5570	39	5504	36	9	4486	5163
3,20	4663	+ 15	5933	— 38	4,20	5417	— 28	5632	— 45	6,0	4995	4470
22	4486	22	5842	34	22	5236	16	5716	51	1	5495	5165
24	4331	29	5716	29	24	5040	— 2	5749	54	2	4676	5398
26	4204	34	5562	23	26	4841	+ 12	5730	52	3	4760	4555
28	4111	38	5385	15	28	4655	26	5658	48	4	5496	4965
3,30	4057	+ 41	5193	— 7	4,30	4494	+ 38	5540	— 39	6,5	4816	5454
32	4043	42	4994	+ 1	32	4371	47	5383	28	6	4690	4681
34	4071	41	4796	10	34	4295	53	5199	— 14	7	5467	4915
36	4139	38	4608	19	36	4270	55	5001	+ 1	8	4831	5436
38	4246	34	4439	26	38	4301	53	4804	16	9	4732	4624
3,40	4385	+ 27	4296	+ 33	4,40	4383	+ 47	4623	+ 30	7,0	5455	4997
42	4551	20	4186	38	42	4512	37	4471	42	1	4733	5360
44	4738	11	4114	42	44	4678	24	4360	51	2	4887	4573
46	4935	+ 2	4084	44	46	4868	+ 10	4299	56	3	5393	5189
48	5134	— 8	4097	43	48	5067	— 6	4293	56	4	4601	5161
3,50	5326	— 17	4152	+ 41	4,50	5260	— 22	4343	+ 53	7,5	5160	4607
52	5501	26	4249	36	52	5432	36	4444	45	6	5156	5389
54	5650	33	4381	30	54	5568	47	4590	33	7	4628	4620
56	5767	39	4543	22	56	5658	55	4768	18	8	5395	4896
58	5845	43	4727	13	58	5694	58	4964	+ 2	9	4760	5323
3,60	5880	— 45	4923	+ 3	4,60	5672	— 56	5162	— 14	8,0	4993	4602
62	5869	45	5122	— 7	62	5595	50	5346	30	1	5228	5520
64	5815	42	5314	18	64	5469	40	5500	43	2	4638	4859
66	5718	38	5489	27	66	5304	26	5611	53	3	5377	4932
68	5584	31	5637	35	68	5114	— 9	5670	59	4	4709	5243
3,70	5419	— 22	5750	— 41	4,70	4914	+ 8	5671	— 59	8,5	5142	4693
72	5233	12	5822	45	72	4723	25	5615	54	6	5025	5369
74	5036	— 1	5849	47	74	4557	40	5504	45	7	4827	4677
76	4837	+ 10	5830	46	76	4431	52	5350	31	8	5280	5229
78	4649	21	5764	43	78	4355	59	5166	— 14	9	4661	4886
3,80	4481	+ 31	5656	— 37	4,80	4338	+ 61	4968	+ 4	9,0	5354	4999
82	4343	39	5512	29	82	4380	57	4773	22	1	4666	5104
84	4244	45	5338	19	84	4479	48	4600	38	2	5291	4814
86	4189	48	5147	— 8	86	4624	35	4464	51	3	4763	5247
88	4182	49	4947	+ 4	88	4804	+ 18	4378	59	4	5180	4713
3,90	4223	+ 47	4752	+ 16	4,90	5002	— 1	4351	+ 62	9,5	4873	5310
92	4311	42	4573	27	92	5198	20	4384	59	6	5081	4679
94	4439	34	4420	36	94	5375	37	4476	50	7	4955	5325
96	4601	24	4303	44	96	5515	51	4618	37	8	5019	4876
98	4786	13	4230	49	98	5605	60	4795	20	9	4996	5321
4,00	4984	0	4205	+ 51	5,00	5636	— 63	4992	0	10,0	4999	4682
	0,		0,			0,		0,			0,	0,

ภาคผนวกที่ 2

ตารางแสดงค่าการวิเคราะห์รูปแบบการเลี้ยวเบนของรูปที่ 4.12 โดยใช้ Cornu's spiral

v	v_x	v_y	a	A^2	1 บนฉาก (ซม)
2.00	.4882	.3434	0.16	0.03	.030
1.50	.4453	.6975	0.20	0.04	.022
1.00	.7799	.4383	0.29	0.08	.015
0.50	.4923	.0647	0.44	0.19	.007
0.20	.1999	.0042	0.58	0.34	.003
0	0	0	0.71	0.5	0
.20	.1999	.0042	0.86	0.74	.003
.40	.3975	.0334	1.04	1.09	.006
.60	.5811	.1105	1.24	1.54	.009
.80	.7230	.2493	1.43	2.06	.012
1.00	.7799	.4383	1.59	2.53	.015
1.20	.7154	.6234	1.66	2.74	.018
1.40	.5431	.7135	1.60	2.56	.021
1.60	.3655	.6389	1.43	2.05	.024
1.80	.3336	.4508	1.26	1.60	.027
2.00	.4882	.3434	1.30	1.69	.030
2.20	.6363	.4557	1.48	2.19	.033
2.40	.5550	.6197	1.54	2.37	.036
2.60	.3890	.5500	1.38	1.90	.039
2.80	.4675	.3915	1.32	1.73	.042
3.00	.6058	.4963	1.49	2.22	.045
3.20	.4664	.5933	1.46	2.13	.048
3.40	.4385	.4296	1.32	1.74	.051
3.60	.5880	.4923	1.47	2.18	.054
3.80	.4481	.5656	1.43	2.03	.057
4.00	.4984	.4204	1.35	1.84	.060

ภาคผนวกที่ 2 (ต่อ)

v	v_x	v_y	a	A^2	$\frac{1}{2}$ บพฉาก (ซม)
4.20	.5418	.5633	1.49	2.22	.063
4.40	.4383	.4662	1.34	1.81	.067
4.60	.5673	.5162	1.47	2.16	.070
4.80	.4338	.4968	1.36	1.86	.073
5.00	.5637	.4992	1.46	2.13	.076
5.10	.4998	.5624	1.45	2.12	.077
5.20	.4389	.4969	1.36	1.88	.079
5.30	.5078	.4405	1.38	1.90	.080
5.40	.5573	.5140	1.46	2.15	.082
5.50	.4784	.5537	1.44	2.07	.083
5.60	.4517	.4700	1.36	1.85	.085
5.70	.5385	.4595	1.41	2.00	.086
5.80	.5289	.5461	1.45	2.09	.088
5.90	.4486	.5163	1.39	1.93	.089
6.00	.4995	.4470	1.37	1.90	.091

ภาคผนวกที่ 3

ตารางแสดงค่าการวิเคราะห์แบบการเลี้ยวเบนรองเตี่ยวรูปที่ 4.19 มีค่า $\Delta v = 0.4$

v	ตำแหน่งที่ 1 บน spiral			ตำแหน่งที่ 2 บน spiral			A^2
	v_1	x_1	y_1	v_2	x_2	y_2	
9	9.2	.5291	.4814	8.8	.5280	.5229	.0017
8.8	9.0	.5354	.4999	8.6	.5025	.5369	.0025
8.6	8.8	.5280	.5229	8.4	.4709	.5243	.0033
8.4	8.6	.5025	.5369	8.2	.4638	.4859	.0040
8.2	8.4	.4709	.5243	8.0	.4998	.4602	.0049
8.0	8.2	.4638	.4859	7.8	.5395	.4896	.0057
7.8	8.0	.4998	.4602	7.6	.5156	.5389	.0064
7.6	7.8	.5395	.4896	7.4	.4601	.5161	.0070
7.4	7.6	.5156	.5389	7.2	.4887	.4572	.0074
7.2	7.4	.4601	.5161	7.0	.5455	.4997	.0076
7.0	7.2	.4887	.4572	6.8	.4831	.5436	.0074
6.8	7.0	.5455	.4997	6.6	.4690	.4631	.0071
6.6	6.8	.4831	.5436	6.4	.5496	.4965	.0066
6.4	6.6	.4690	.4631	6.2	.4676	.5398	.0059
6.2	6.4	.5465	.4965	6.0	.4995	.4470	.0050
6.0	6.2	.4676	.5398	5.8	.5298	.5461	.0039
5.8	6.0	.4995	.4470	5.6	.4517	.4700	.0028
5.6	5.8	.5298	.5461	5.4	.5573	.5140	.0018
5.4	5.6	.4517	.4700	5.2	.4389	.4969	.0009
5.2	5.4	.5573	.5140	5.0	.5637	.4992	.0003
5.0	5.2	.4389	.4969	4.8	.4338	.4968	.00003
4.8	5.0	.5637	.4992	4.6	.5637	.5162	.0003
4.6	4.8	.4338	.4968	4.4	.4383	.4622	.0012
4.4	4.6	.5637	.5162	4.2	.5418	.5633	.0027
4.2	4.4	.4383	.4622	4.0	.4984	.4204	.0054
4.0	4.2	.5418	.5633	3.8	.4481	.5656	.0088

ภาคผนวกที่ 3 (ต่อ)

v	ตำแหน่งที่ 1 บน spiral			ตำแหน่งที่ 2 บน spiral			A^2
	v_1	x_1	y_1	v_2	x_2	y_2	
3.8	4.0	.4984	.4204	3.6	.5880	.4923	.0132
3.6	3.8	.4481	.5656	3.4	.4385	.4296	.0186
3.4	3.6	.5880	.4923	3.2	.4664	.5933	.0269
3.2	3.4	.4385	.4296	3.0	.6058	.4963	.0333
3.0	3.2	.4664	.5933	2.8	.4675	.3915	.0407
2.8	3.0	.6058	.4963	2.6	.3890	.5500	.0499
2.6	2.8	.4675	.3915	2.4	.5550	.6197	.0597
2.4	2.6	.3890	.5500	2.2	.6363	.4557	.0701
2.2	2.4	.5550	.6197	2.0	.4882	.3434	.0808
2.0	2.2	.6363	.4557	1.8	.3336	.4508	.0917
1.8	2.0	.4882	.3434	1.6	.3655	.6389	.1024
1.6	1.8	.3336	.4508	1.4	.5431	.7135	.1134
1.9	1.6	.3655	.6389	1.2	.7154	.6234	.1224
1.2	1.4	.5431	.7135	1.0	.7799	.4383	.1318
1.0	1.2	.7154	.6234	.8	.7230	.2493	.1400
.8	1.0	.7799	.4383	.6	.5811	.1105	.1474
.6	.8	.7230	.2493	.4	.3975	.0334	.1526
.4	.6	.5811	.1105	.2	.1999	.0042	.1566
.2	.4	.3975	.0334	0	.0000	.0000	.1591
.0	.2	.1999	.0042	-2	.1999	.0042	.1599

ภาคผนวกที่ 4

ตารางแสดงค่าการวิเคราะห์แบบการเลี้ยวเบนของวัตถุรูปที่ 4.27 $\Delta v = 0.40$

v	ตำแหน่งที่ 1				ตำแหน่งที่ 2				θ	A^2
	v_1	x_1	y_1	a_1	v_2	x_2	y_2	a_2		
7.0	7.2	.4887	.4572	.044	6.8	.4831	.5436	1.508	154.0	2.29
6.8	7.0	.5455	.4997	.045	6.6	.4690	.4631	1.366	45.2	1.78
6.6	6.8	.4831	.5436	.046	6.4	.5496	.4965	1.447	67.7	2.05
6.4	6.6	.4690	.4631	.048	6.2	.4676	.5398	1.420	177.0	2.16
6.2	6.4	.5496	.4965	.049	6.0	.4995	.4470	1.377	51.5	1.91
6.0	6.2	.4676	.5398	.051	5.8	.5298	.5461	1.468	83.7	2.04
5.8	6.0	.4995	.4470	.053	5.6	.4517	.4700	1.359	136.0	1.95
5.6	5.8	.5298	.5461	.054	5.4	.5573	.5140	1.465	13.3	2.00
5.4	5.6	.4517	.4700	.056	5.2	.4389	.4969	1.369	165.1	2.03
5.2	5.4	.5573	.5140	.059	5.0	.5637	.4992	1.459	29.5	1.98
5.0	5.2	.4389	.4969	.061	4.8	.4338	.4968	1.366	138.9	2.00
4.8	5.0	.5637	.4992	.064	4.6	.5673	.5162	1.474	44.3	2.04
4.6	4.8	.4338	.4968	.066	4.4	.4383	.4622	1.344	137.0	1.94
4.4	4.6	.5673	.5162	.069	4.2	.5418	.5633	1.488	32.0	2.04
4.2	4.4	.4383	.4622	.072	4.0	.4984	.4204	1.358	168.8	2.04
4.0	4.2	.5418	.5633	.075	3.8	.4481	.5656	1.426	8.2	1.83
3.8	4.0	.4984	.4204	.079	3.6	.5880	.4923	1.473	137.6	2.35
3.6	3.8	.4481	.5656	.083	3.4	.4385	.4296	1.321	83.6	1.73
3.4	3.6	.5880	.4923	.088	3.2	.4664	.5933	1.460	53.5	1.98
3.2	3.4	.4385	.4296	.093	3.0	.6058	.4963	1.488	137.1	2.43
3.0	3.2	.4664	.5933	.099	2.8	.4675	.3915	1.316	67.1	1.64
2.8	3.0	.6058	.4963	.106	2.6	.3890	.5500	1.376	51.8	1.72
2.6	2.8	.4675	.3915	.113	2.4	.5550	.6197	1.538	153.4	2.69
2.4	2.6	.3890	.5500	.122	2.2	.6363	.4557	1.485	91.4	2.23
2.2	2.4	.5550	.6197	.132	2.0	.4882	.3434	1.300	24.8	1.39
2.0	2.2	.6363	.4557	.143	1.8	.3336	.4508	1.266	66.8	1.48
1.8	2.0	.4882	.3434	.157	1.6	.3655	.6398	1.431	140.5	2.42

ภาคผนวกที่ 4 (ต่อ)

v	ตำแหน่งที่ 1				ตำแหน่งที่ 2				θ	A^2
	v_1	x_1	y_1	a_1	v_2	x_2	y_2	a_2		
1.6	1.8	.3336	.4508	.174	1.4	.5431	.7135	1.600	147.2	3.06
1.4	1.6	.3655	.6389	.194	1.2	.7154	.6234	1.655	91.1	2.80
1.2	1.4	.5431	.7135	.218	1.0	.7799	.4383	1.587	42.3	2.06
1.0	1.2	.7154	.6234	.248	.8	.7230	.2493	1.434	28.2	1.49
.8	1.0	.7799	.4383	.287	.6	.5811	.1105	1.241	41.9	1.09
.6	.8	.7230	.2493	.336	.4	.3975	.0334	1.044	79.0	1.07
.4	.6	.5811	.1105	.398	.2	.1999	.0042	.863	114.0	1.18
.2	.4	.3975	.0334	.478	0	.0000	.0000	.707	147.4	1.30
0	.2	.1999	.0042	.580	-.2	.1999	.0042	.580	1 0	1.66