HP-35s Calculator Program –

Compute Horizontal Curve Values given only 2 Parameters

Author: This program is based on a program written by Dr. Bill Hazelton (http://www.wollindina.com/HP-35S/HP-35s_Curves_1A.pdf).
Some modifications and additions were made to the original program

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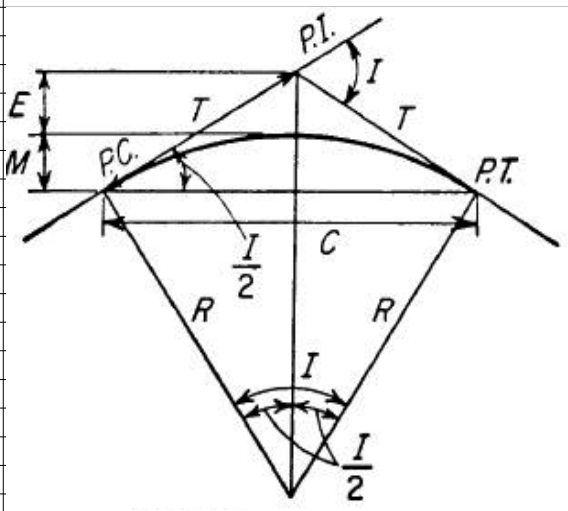
Line	Instruction	Process	User Instruction
H001	LBLH	Establishing the library	
H002	CLSTK		
H003	FS? 10		
H004	GTO H008		
H005	SF 1		
H006	SF 10		
H007	GTO H011		
H008	CF 1		
H009	SOLVING FOR		Key in using EQN, RCL S, RCL O, e
H010	PSE		
H011	HORIZ CURVE		
H012	PSE		
H013	Clx		
H014	STO C		
H015	STO R		
H016	STO Q		
H017	STO T		
H018	STO A		
H019	CLΣ		
H020	CHORD LENGTH		
H021	PSE		Nomenclature:
H022	IN STATIONS		
H023	PSE		A = Length of Arc (in Stations)
H024	INPUT C		B = Segment Area
H025	x≠0?		C = Chord Length (in Stations)
H026	Σ+		D = Degrees of Curvature
H027	RADIUS IN STAT		E = External Distance
H028	PSE		I = Influence factor
H029	INPUT R		M = Mid Ordinate
H030	x≠0?	What is indicated as I in the diagram is Q in the program	O = OCR
H031	Σ+		P = Applied load
H032	DEFLECTION		Q = Angle of Deflection
H033	PSE		R = Radius (In stations)
H034	INPUT Q		T = Tangent Length (In Stations)
H035	RCL Q		X = Station PC
H036	STO Q		Y = Station PI
H037	x≠0?		Z = Station PT
H038	Σ+		
H039	TANGENT LENGTH		
H040	PSE		
H041	IN STATIONS		
H042	PSE		
H043	INPUT T		
H044	x≠0?		
H045	Σ+		
H046	ARC LENGTH STAT		
H047	PSE		
H048	INPUT A		
H049	x≠0?		
H050	Σ+		
H051	2		
H052	n		
H053	x<y?		
H054	GTO H108		
H055	x=y?		
H056	GTO H062		
H057	ONLY 2 INPUTS		
H058	PSE		

H059	SET 1 TO 0!		
H060	PSE		
H061	GTO H013		
H062	RCL C		
H063	x=0?		
H064	GTO H078		
H065	RCL R		
H066	x≠0?		
H067	GTO H113		
H068	RCL Q		
H069	x≠0?		
H070	GTO H117		
H071	RCL T		
H072	x≠0?		
H073	GTO H121		
H074	RCL A		
H075	x≠0?		
H076	GTO H145		
H077	GTO H108		
H078	RCL R		
H079	x=0?		
H080	GTO H091		
H081	RCL Q		
H082	x≠0?		
H083	GTO H125		
H084	RCL T		
H085	x≠0?		
H086	GTO H129		
H087	RCL A		
H088	x≠0?		
H089	GTO H133		
H090	GTO H108		
H091	RCL Q		
H092	x=0?		
H093	GTO H101		
H094	RCL T		
H095	x≠0?		
H096	GTO H137		
H097	RCL A		
H098	x≠0?		
H099	GTO H141		
H100	GTO H108		
H101	RCL T		
H102	x=0?		
H103	GTO H108		
H104	RCL A		
H105	x=0?		
H106	GTO H108		
H107	GTO H149		
H108	NOT ENOUGH		
H109	PSE		
H110	DATA RE-ENTER!		
H111	PSE		
H112	GTO H013		
H113	XEQ H188		
H114	XEQ H258		
H115	XEQ H218		
H116	GTO H152		
H117	XEQ H224		
H118	XEQ H258		
H119	XEQ H218		
H120	GTO H152		
H121	XEQ H209		
H122	XEQ H224		
H123	XEQ H218		

H124	GTO H152		
H125	XEQ H249		
H126	XEQ H258		
H127	XEQ H218		
H128	GTO H152		
H129	XEQ H202		
H130	XEQ H249		
H131	XEQ H218		
H132	GTO H152		
H133	XEQ H197		
H134	XEQ H249		
H135	XEQ H258		
H136	GTO H152		
H137	XEQ H240		
H138	XEQ H224		
H139	XEQ H218		
H140	GTO H152		
H141	XEQ H234		
H142	XEQ H249		
H143	XEQ H258		
H144	GTO H152		
H145	XEQ H268		
H146	XEQ H224		
H147	XEQ H258		
H148	XEQ H152		
H149	XEQ H287		
H150	XEQ H234		
H151	XEQ H249		
H152	RCL Q		
H153	→RAD		
H154	RCL Q		
H155	SIN		
H156	-		
H157	RCL R		
H158	x^2		
H159	×		
H160	2		
H161	÷		
H162	STO B		
H163	SOLUTION		
H164	PSE		
H165	CHORD		
H166	PSE		
H167	VIEW C		
H168	RADIUS		
H169	PSE		
H170	VIEW R		
H171	TANGENT		
H172	PSE		
H173	VIEW T		
H174	ARCH LENGTH		
H175	PSE		
H176	VIEW A		
H177	RCL Q		
H178	STO Q		
H179	DEFLECTION θ		
H180	PSE		
H181	VIEW Q		
H182	RCL Q		
H183	STO Q		
H184	SEGMENT AREA		
H185	PSE		
H186	VIEW B		
H187	GTO H308		
H188	RCL C		

H189	2		
H190	÷		
H191	RCL÷ R		
H192	ASIN		
H193	2		
H194	×		
H195	STO Q		
H196	RTN		
H197	RCL A		
H198	RCL÷ R		
H199	→DEG		
H200	STO Q		
H201	RTN		
H202	RCL T		
H203	RCL÷ R		
H204	ATAN		
H205	2		
H206	×		
H207	STO Q		
H208	RTN		
H209	RCL C		
H210	2		
H211	÷		
H212	RCL÷ T		
H213	ACOS		
H214	2		
H215	×		
H216	STO Q		
H217	RTN		
H218	RCL R		
H219	RCL Q		
H220	→RAD		
H221	×		
H222	STO A		
H223	TRTN		
H224	RCL C		
H225	2		
H226	÷		
H227	RCL Q		
H228	2		
H229	÷		
H230	SIN		
H231	÷		
H232	STO R		
H233	RTN		
H234	RCL A		
H235	RCL Q		
H236	→RAD		
H237	÷		
H238	STO R		
H239	RTN		
H240	2		
H241	RCL× T		
H242	RCL Q		
H243	2		
H244	÷		
H245	COS		
H246	×		
H247	STO C		
H248	RTN		
H249	2		
H250	RCL× R		
H251	RCL Q		
H252	2		
H253	÷		

H254	SIN		
H255	×		
H256	STO C		
H257	RTN		
H258	RCL C		
H259	2		
H260	÷		
H261	RCL Q		
H262	2		
H263	÷		
H264	COS		
H265	÷		
H266	STO T		
H267	RTN		
H268	0		
H269	STO U		
H270	RCL A		
H271	RCL÷ C		
H272	1		
H273	-		
H274	0.06		
H275	÷		
H276	√x		
H277	→DEG		
H278	STO Q		
H279	FN= U		
H280	SOLVE Q		
H281	RTN		
H282	CANNOT SOLVE		
H283	PSE		
H284	WITH THESE DATA		
H285	PSE		
H286	GTO H308		
H287	1		
H288	STO U		
H289	RCL T		
H290	RCL÷ A		
H291	0.5		
H292	-		
H293	7		
H294	×		
H295	RCL A		
H296	RCL÷ T		
H297	x^2		
H298	÷		
H299	→DEG		
H300	STO Q		
H301	FN= U		
H302	SOLVE Q		
H303	RTN		
H304	CANNOT SOLVE		
H305	PSE		
H306	WITH THESE DATA		
H307	PSE		
H308	RCL Q		
H309	4		
H310	÷		
H311	TANGENT		
H312	RCL T		
H313	×		
H314	STO E		
H315	RCL E		
H316	RCL Q		
H317	2		
H318	÷		

H319	COS			
H320	+/-			
H321	1		U001	LBL U
H322	+		U002	RCL U
H323	RCL R		U003	x=0?
H324	×		U004	GTO U017
H325	STO M		U005	RCL Q
H326	EXT DISTANCE		U006	2
H327	PSE		U007	÷
H328	VIEW E		U008	TAN
H329	MID ORDINATE		U009	RCL Q
H330	PSE		U010	→RAD
H331	VIEW M		U011	÷
H332	5729.58		U012	RCL T
H333	RCL R		U013	RCL÷ A
H334	÷		U014	-
H335	STO D		U015	→DEG
H336	DEG CURVATURE		U016	RTN
H337	PSE		U017	RCL Q
H338	VIEW D		U018	2
H339	IS PC AVAILABLE		U019	÷
H340	PSE		U020	SIN
H341	INPUT X	If PC is available use its own value, else use 0	U021	2
H342	x=0?		U022	×
H343	GTO H008		U023	RCL Q
H344	H358		U024	→RAD
H345	SOLVING PI		U025	÷
H346	PSE		U026	RCL C
H347	RCL T		U027	RCL÷ A
H348	+		U028	-
H349	STO Y		U029	→DEG
H350	VIEW Y		U030	RTN
H351	SOLVING PT			
H352	PSE			
H353	RCL X			
H354	RCL A			
H355	+			
H356	STO Z			
H357	VIEW Z			
H358	GTO H393			
H359	IS PI AVAILABLE			
H360	PSE			
H361	INPUT Y	If PI is available use its own value, else use 0		
H362	x=0?			
H363	GTO H376			
H364	SOLVING PC			
H365	PSE			
H366	RCL T			
H367	-			
H368	STO X			
H369	VIEW X			
H370	SOLVING PT			
H371	PSE			
H372	RCL A			
H373	+ STO Z			
H374	VIEW Z			
H375	GTO H393			
H376	IS PT AVAILABLE	If PT is available use its own value, else use 0		
H377	PSE			
H378	INPUT Z			
H379	x=0?			
H380	GTO H393			
H381	SOLVING PC			
H382	PSE			
H383	RCL A			

H384	-		
H385	STO X		
H386	VIEW X		
H387	SOLVING PT		
H388	PSE		
H389	RCL T		
H390	+		
H391	STO Y		
H392	VIEW Y		
H393	CLSTK		
H394	FS? 10		
H395	CF 10		
H396	STOP		
H397	RTN		