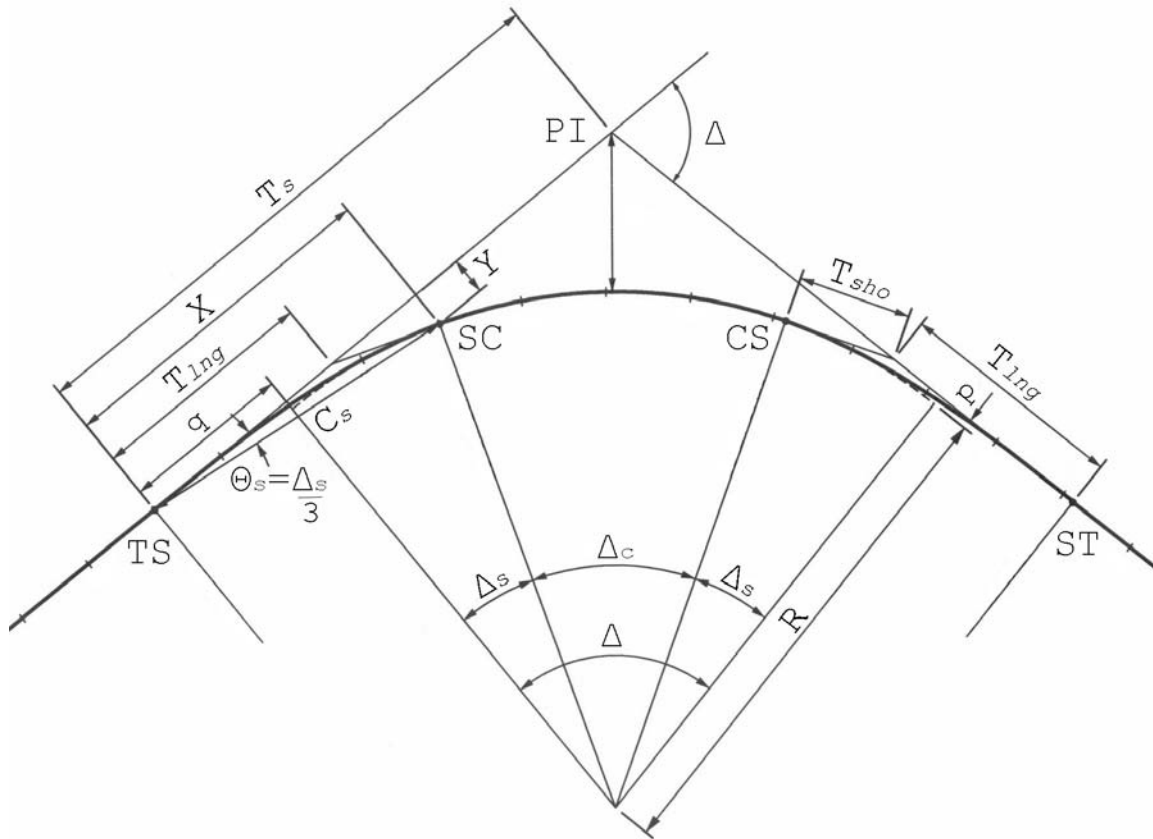


# SpiSOLVE 1.0

By Jacob Wall

## Introduction

SpiSOLVE is a Spiral Curve Solver for the HP 49g+ and 50g calculators. The diagram below illustrates the spiral geometry and associated symbols.



Ts	– Tangent of Spiral-Curve-Spiral	p	– Distance from Tangent that the Curve (Ghost BC) has been Offset
X	– Distance along Tangent from TS to Point at Right Angle to SC	Tc	– Tangent of Curve (not labelled)
Y	– Right Angle distance from Tangent to SC	Cs	– Long Chord (Spiral)
Tlng	– Long Tangent (Spiral)	Cc	– Curve Chord (not labelled)
Tsho	– Short Tangent (Spiral)	$\Delta_s$	– Spiral Delta
Ls	– Length of Spiral (not labelled)	$\Delta_c$	– Curve Delta
q	– Distance along Tangent to a Point at Right Angle to Ghost BC	$\Delta$	– Total Delta
		A	– Spiral Parameter
		R	– Curve Radius
		Lc	– Length of Curve (not labelled)

## Program Information

SpiSOLVE has been designed to work with all current settings of the calculator, and to deliver outputs based on the same settings. Display settings for number format and angle measure are honoured, and if Angle Measure setting is set to 'Degrees', an option is available to enter angles in D°M'S" format. A softkey indicates whether DMS mode is enabled or not.

The length of the spiral and the curve radius are always required to be known. A third variable may be the curve delta angle, the curve length or the spiral tangent. The third variable selection may be toggled with the Left and Right arrow keys.

The program is a library, ID 924, and can be launched by entering the command **SPI**, once installed.

## Example

A spiral curve with the following known elements:

Ls = 50.000      R=300.000       $\Delta c=25^{\circ}15'30''$

Enter the known parts into the input form as shown below, the results are left on the stack:

SPIRAL CURVE SOLVER	
Spiral Length..	50.0000
Curve Radius....	300.0000
Curve Defa	25°15'30"
Length of Spiral	
EDIT	DMS ■ CANCEL OK

DEG XYZ DEC C◀ 'X'	
[HOME]	
7:	Tlng:33.3445
6:	Tc:67.2183
5:	A:122.4745
4:	X:49.9653
3:	Y:1.3882
2:	p:0.3471
1:	q:24.9942
SPI	

The results are (4 FIX):

R:300.0000

$\Delta s:4.4629$  ( $4^{\circ}46'29''$ )

$\Delta c:25.1530$  ( $25^{\circ}15'30''$ )

$\Delta:34.4827$  ( $34^{\circ}48'27''$ )

Ls:50.0000

Lc:132.2523

Cs:49.9846

Cc:131.1840

Ts:119.1393

Tsho:16.6787

Tlng:33.3445

Tc:67.2183

A:122.4745

X:49.9653

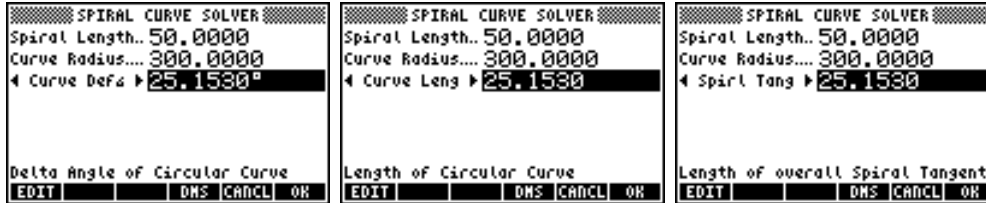
Y:1.3882

p:0.3471

q:24.9942

## Notes:

1. Toggling DMS mode (F4), changes how the Curve Def. Angle field is displayed.
2. Arrow Right/Left on the third field to change the field label and help string to the other two options, Curve Length or Spiral Tangent.



## Other Information

If you have any questions or comments email [jacobw@surv50.ca](mailto:jacobw@surv50.ca)

For HP 49g+/50g software with full 3D alignments, including spiral-curve-spiral, see COGO+50 at <http://surv50.ca/cogo.html>