Fitting your data with the OpenOffice Solver
The OpenOffice Solver is an extension that you can download and add. Excel has a similar function that you also can add. After it is added, you access it through <tools>:<solver>

Non-linear fits in general have no guarantee of finding an optimal solution. These fits are often quite sensitive to initial parameters and step sizes. However, when they work, they are quite useful.

This shows a screen capture of my parameters used for the OpenOffice solver. In particular, I choose constraints so that the phase is between 0 and 360 degrees, and that the amplitude is greater or equal to zero. The target cell is G2, and this value is to be minimized by changing cells corresponding to phase and amplitude.

You will need probably to have an initial guess which is not so bad, and follows the general trend of the line. This is accomplished by manually changing cells G2 and G4 which are the phase and amplitude, respectively. Be sure to watch the plots of the curve as the fitting process progresses.

My minimization condition is to minimize the standard deviation of the square deviations of the fit from the actual data. There are other criteria that could be used here, but usually a similar definition of error proves to be sufficient.