

Compute elevations on the vertical curve as specified and include in your table a column showing the slope of a line tangent to the curve at that station. Also provide a basic sketch of the curves showing G_1 , G_2 , L , Station and Elevation of PVC, PVI, and PVT. If the curve length must be computed based on a given rate of change, please show how you calculated the length.

1. Given an entering grade of $+3.00\%$ intersecting a -2.40% grade at station $46+70$ and elevation 853.48 . Compute this vertical curve at full stations if the rate of change in grade per station is to be -0.90% .
2. On a railroad a $+0.8\%$ grade meets a -0.4% grade at station $90+00$ and at elevation 100.00 . The maximum allowable change in grade per station is -0.2% . Find the elevations on the curve at every full station.
3. Calculate the elevation at each half station of a parabolic curve where the grade from the PVC (station $1+50$ and elevation 434.10) to the PVI is -6.50% . The grade from the PVI to the PVT is $+4.00\%$ and the maximum allowable change in grade per station is $+2.625\%$.