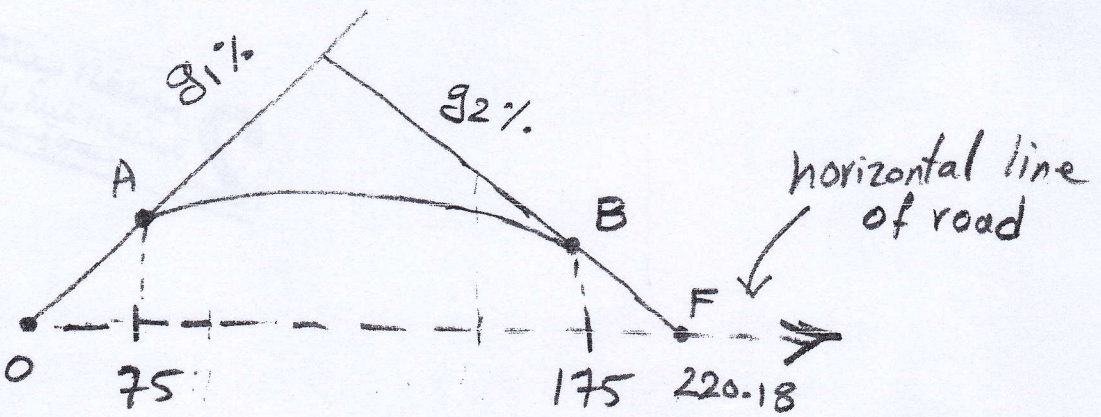
Example 2/ Taken the elevation of specified points as shown in table below at horizontal line of road. The connection between point A and B has done by vertical curve. Assume the first gradient pass through O and A, while the second gradient pass through B and F. Compute the R.L of curve at 25m interval.

Distance (m)	0	75	175	220.8
Elevation (m)	62.40	63.96	64.13	65.38
point	O	A	B	F



Sol. $g_1 = \frac{\text{Elevation A} - \text{Elevation O}}{\text{distance between A} \to \text{O}} = \frac{63.96 - 62.40}{75}$

$= 0.02 = +2\%$

$g_2 = \frac{\text{Elevation F} - \text{Elevation B}}{\text{distance between FB}} = \frac{63.38 - 64.13}{45.18}$

$= -0.016$

$= -1.66\%$

$A = g_2 - g_1 = -1.66 - (2) = -3.66$

$\Delta e = \frac{A \cdot L}{8} = \frac{-3.66 * 1}{8}$ ← 175 − 75 = 100 m = 1 station between A and B

$= -0.4575$

$\Delta y = 4 \Delta e \left(\frac{x}{L}\right)^2 = 4(-0.46)\left(\frac{x}{1}\right)^2 = -1.83 x^2$

Station	x	$g_1 x$	Tangent Elev.(m)	Δy(m)	Curve Elev.(m)
BVC 75	0	0	63.96		63.96
100	0.25	0.5	64.46	−0.114	64.346
125	0.5	1.0	64.96	−0.458	64.502
150	0.75	1.5	65.46	−1.029	64.431
175	1	2.0	65.96	−1.83	64.13

H.W/ A 600m equal tangent sag vertical curve has the BVC at station 170+00 and elevation 1000m. The initial grade is −3.5% and the final grade is +0.5%.

Find: Elevation and stationing of PVI, EVC and the lowest point on the curve.