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1a. Rise and fall. High of collimation

 Advantage. Advantage

It’s easier to spot error. It’s faster than Rise and fall

Disadvantage. Disadvantage

It take time. It’s fairly to error

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| B.S | I.S | F.S | H OF C | R.L | DISTANCE |
| 0.771 |  |  |  | 148 | 10 |
| 0.802 |  | 1.52 | 148.053 | 147.251 | 20 |
|  | 2.311 |  |  | 145.742 | 30 |
| 3.580 |  | 1.990 | 149.643 | 146.063 | 40 |
|  | 1.220 |  |  | 148.423 | 50 |
|  | 3.675 |  |  | 145.968 | 60 |
| 2.408 |  | 4.020 | 148.031 | 145.623 | 70 |
|  | 0.339 |  |  | 147.692 | 80 |
| 0.780 |  | 0.157 | 148.654 | 147.874 | 90 |
|  | 1.535 |  |  | 147.119 | 100 |
|  | 1.955 |  |  | 146.699 | 110 |
|  | 2.430 |  |  | 146.224 | 120 |
|  | 2.985 |  |  | 145.669 | 130 |
| 1.155 |  | 3.480 | 146.329 | 145.174 | 140 |
|  | 1.960 |  |  | 144.369 | 150 |
|  | 2.365 |  |  | 143.964 | 160 |
| 0.935 |  | 3.640 | 143.624 | 142.689 | 170 |
|  | 1.045 |  |  | 142.579 | 180 |
|  | 1.630 |  |  | 141.994 | 190 |
|  |  | 2.545 |  | 141.079 | 200 |
| =10.431 |  | =17.352 |  |  |  |

Checks

front sights-back sights

17.352-10.431=6.922

OR

Check=R.L at first point-R.L at last point

 =6.921=6.921



**2.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Chainage(m)** | 030 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 |
| **Offset length (m)** | 02.65 | 3.80 | 3.75 | 4.65 | 3.60 | 5.00 | 5.80 | 6.10 | 5.85 |

**Solutions**

**Using average method**

**A=ndEO.**

 **N+1**

**N=9, d=30, EO= 41.3**

**A = 9×30×41.2 =1124 1112.4m^2. = 0.11124hecter**

 **9+1. 10**

**Using mid-ordinate**

=1.325m

h2= =3.225m

h3= =3.775m

h4= =4.2m

h5= =4.125m

h6= =4.3m

h7= =5.4m

h8= =5.9m

h9= =5.925m

38.175m

d=30m

**Using trapezoidal**

A = d[O1+On + O2 +O3 ……….+On-1]

 2

A = 851.95[ 4.058+ 3.80+3.75+4.65+3.60+5.00+5.80+6.10+5.85]

A= 36301.59m^2

A= 3.630Hecters

Plate1. Over hanging cliff… a contourlines can not Marge or cross one another on the map except in this case



Plate2. Contourlines can not end anywhere but close on themselves either within or outside the limit of the map.



Plate3. Vertical cliff.. in this case several contours coincide and horizontal equivalent become 0



Plate4. It indicate depression if the higher values are outside

Plate 5. It represent a ridge if the higher values are inside and it represent a. Valley if the higher values are outside.