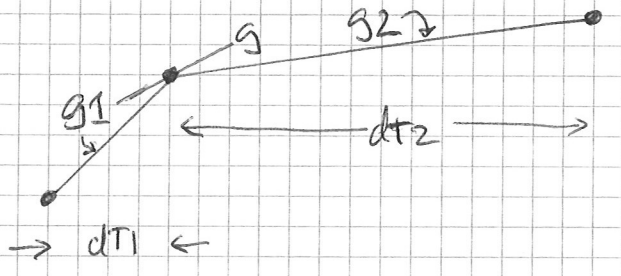
FG LIB SPLINE FUNCTION

- USES PARABOLIC SPLINES (NOT CUBIC)
- EACH SEGMENT IS FORMED BY TWO PARABOLIC SEGMENTS THAT MEET AT THE SPLINE POINT.
  - AT SPLINE POINT, REFERENCES MATCH
  - AT SPLINE POINT, FIRST DERIVATIVES MATCH.
- ALGORITHM MUST CALCULATE GRADIENT AT EACH POINT. 4 RULES APPLY:
  1. IF FIRST POINT $\frac{dR}{dt} = 0$ → START
  2. IF LAST POINT $\frac{dR}{dt} = 0$ → END
  3. IF PREVIOUS OR NEXT POINT IS THE SAME $\frac{dR}{dt} = 0$ → PLATEAU
  4. IF POINT IS LOCAL MAXIMA OR MINIMA $\frac{dR}{dt} = 0$ → MAX / MIN

OTHERWISE, GRADIENT IS WEIGHTED AVERAGE OF SEGMENT GRADIENTS

E.G.



$$g = W \cdot g1 + (1 - W) \cdot g2$$

WHERE $$W = \frac{dT2}{dT1 + dT2}$$

SO SHORTER SEGMENTS HAVE MORE "WEIGHT" THAN LONGER SEGMENTS.