Derivatives note 10/2.
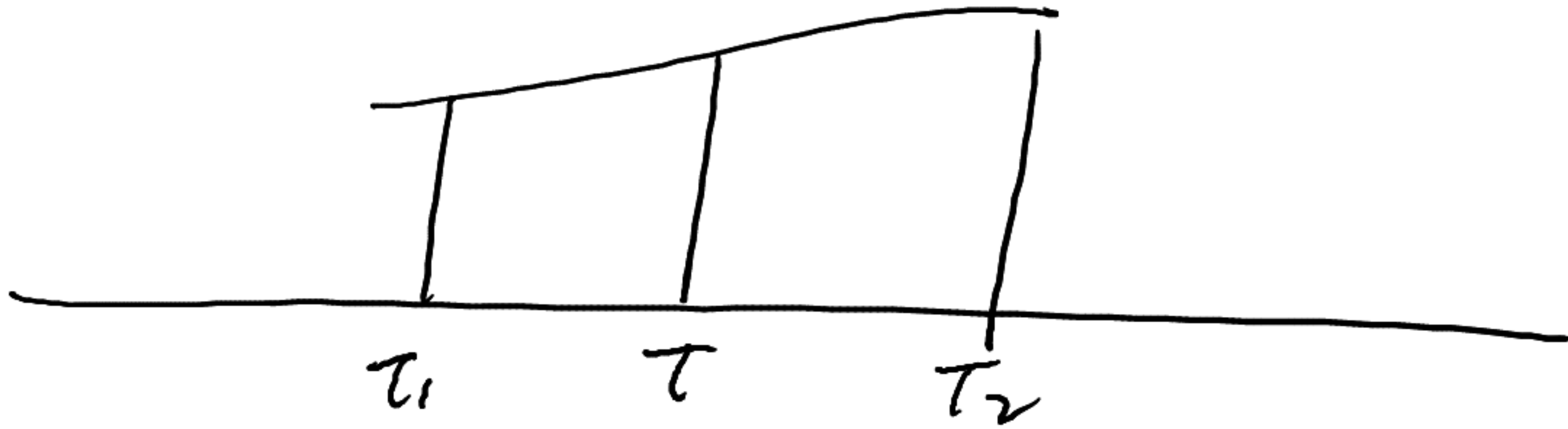
Interpolation of zeros.

$$R(T) = \frac{T_2 - T}{T_2 - T_1} R(T_1) + \frac{T - T_1}{T_2 - T_1} R(T_2)$$

* interpretation is not science, is more of an engineering from the industry

Forward curve discretization.

SEF (brokers/dealers) publish the swap rates based on their actual quotes and b/a spreads.

Swap rate is the rate that both parties agrees on. it is a mathematical value

Unknowns: forward rates and zeros
for grid points. (T_i).

$$F_i = F$$

Swap rates can be derived from the standard formula

$$F(T_i, T_i) = \frac{1}{T_i - T_{i-1}} \left(\frac{Z(T_{i-1})}{Z(T_i)} - 1 \right).$$

definition of forward rate.

penalty function for smoothing
price constraints.

Solve for the curve points.
there is a good paper to read.