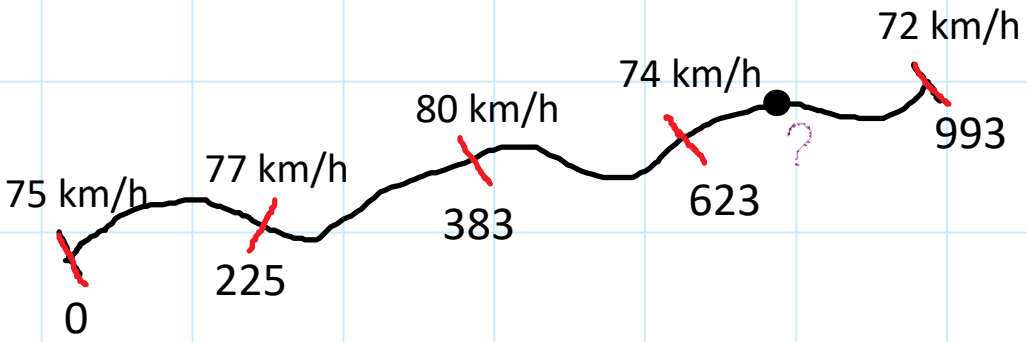
Numerical Calculus - lab5

Wednesday, March 25, 2020 12:00 PM

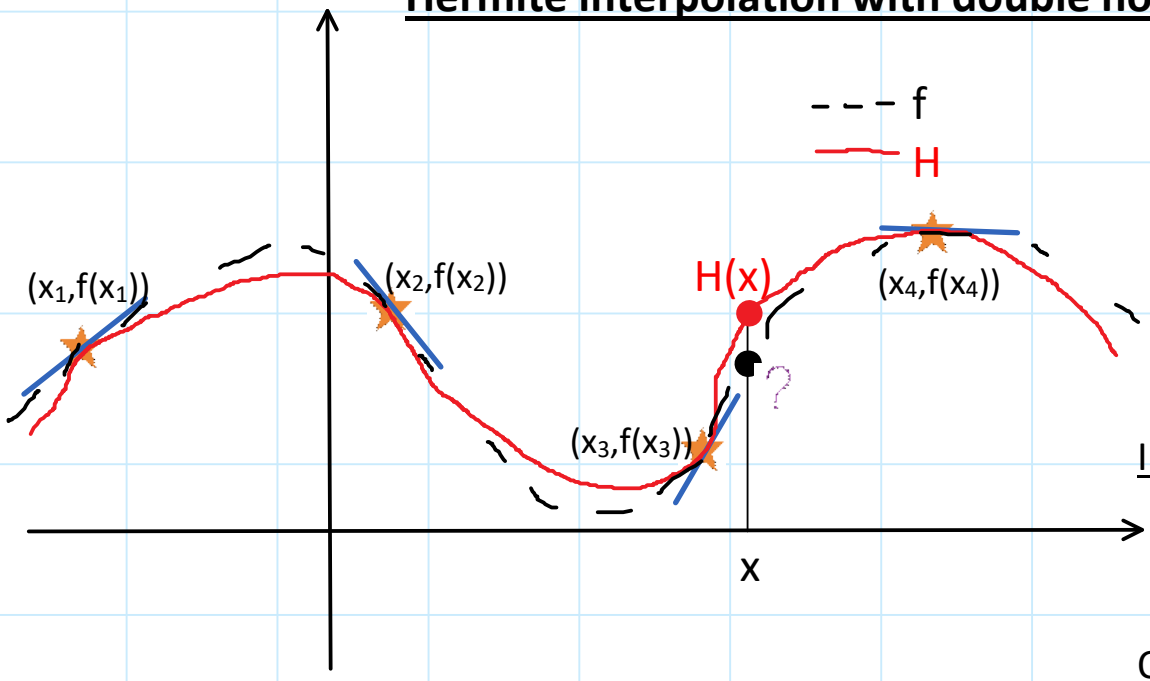
Def. of derivative: $\lim_{x \to y} \frac{f(x) - f(y)}{x - y} = f'(y)$



x	f(x)	f '(x)
time	distance	speed=derivative of distance function

Hermite interpolation with double nodes

degree(H) $\leq$ #double_nodes -1



$H(x_i)=f(x_i)$, i=1,…,n

$H'(x_i)=f'(x_i)$, i=1,…,n

Input: 1) nodes: $x_1,\ldots,x_n$

2) function values: $f(x_1),\ldots,f(x_n)$

3) derivative values: $f'(x_1),\ldots,f'(x_n)$

4) point(s): x

Output: H(x)=Hermite interpolation polynomial at x

H '(x)=derivative of H at x