

# I. Interpolation & Numerical Calculus

- Goals: - How to "read between the lines" of a numerical table
- (Piecewise) polynomial interpolation
  - Approximation of a function by poly. interp. (Measure of errors)
  - Compute derivatives/integrals approximately

Task: Given a table of some quantity  $q$

$i$	0	1	2	$\dots$	$n$
$x_i$	0.00	0.51	1.05	$\dots$	$x_n$
$q_i$	0.00	0.22	0.25	$\dots$	$q_n$

compute approximations of  $q(x)$

ie. easy to evaluate, derive,  
integrate

$$q'(x) \quad ?$$

$$\int_a^b q(x) dx \quad \bullet$$

no find a simple (& reasonable) function  $q(x)$  that matches the data

$$q(x_i) = q_i, \quad i = 0, 1, \dots, n$$