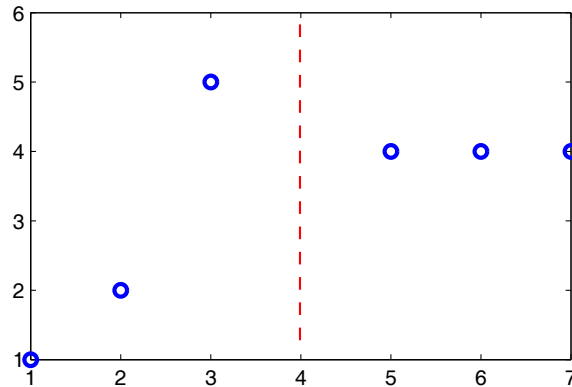


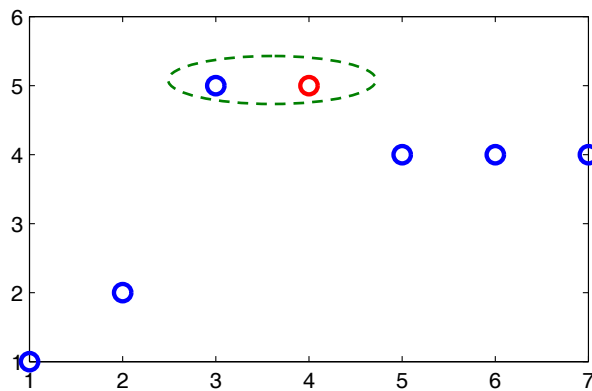
Numerical Interpolation:

$F(1) = 1;$
 $F(2) = 2;$
 $F(3) = 3;$
 $F(4) = \dots$
 $F(5) = 4;$
 $F(6) = 4;$
 $F(7) = 4;$



0-th order interpolation

$F(k) = F(k-1);$



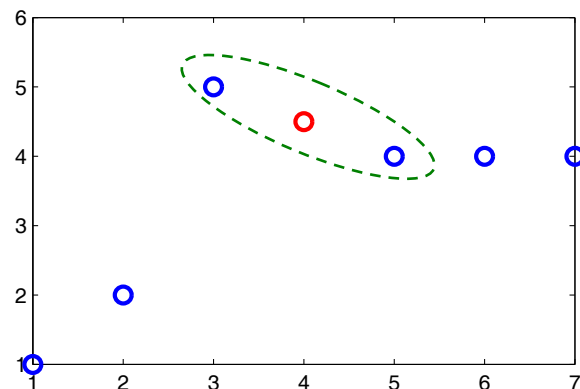
1st order interpolation

Piecewise Linear interpolation:

$F(k-1) = a \cdot x(k-1) + b$
 $F(k+1) = a \cdot x(k+1) + b$

Find: $a, b;$

$F(k) = a \cdot X(k) + b$



High order interpolatins

Piecewise Quadratic interpolation:

$$F(k) = a*x(k)^2 + bx(k) + c$$

Find: a,b,c

Forward scheme: $F(k-2), F(k-1), F(k+1)$

Backward scheme: $F(k-1), F(k+1), F(k+2)$

Read:

polar

To do:

$$\text{phi} = (0 : \text{pi}/39.5 : 2*\text{pi});$$

$$\text{omega} = 4;$$

$$F(\text{phi}) = 2 + \sin(\text{omega}*\text{phi} - \text{pi}/8);$$

F1(phi) = F'(phi) : 2 point central derivative

F2(phi) = F'(phi) : 5 point derivative

1) L1(1:40) = (Interpolate missing pixels in F1, 0th order interpolation)

2) L2(1:40) = (Interpolate missing pixels in F2, 0th order interpolation)

3) G1(1:40) = (Interpolate missing pixels in F1, linear interpolation)

4) G2(1:40) = (Interpolate missing pixels in F2, linear interpolation)

Polar plot: L1, L2

Polar plot: G1, G2

5) H1(phi) = F''(phi) : 2 point central derivative

6) H2(phi) = F''(phi) : 5 point derivative

Polar plot: H1, H2