= ()	= ()	= ()	= ()
2.5	2.5	2.5	2.5
2.2	3.25	2.40625	2.3125
2.36364	7.5625	2.35828	2.302802
2.26923	54.1914	2.33288	2.302776
2.32203	2933.71	2.31920	2.302776
2.29197	8606642.63	2.31176	2.302776
2.30892	741	2.30770	2.302776

The function , , converges to the solution while diverges

The function g(x) is converges to the solution if 1

Example g(x) = 1 + x - , = -2.05

) = 1- , 1

= -2.05

= -2.100625

= -2.0378135

= -2.41794441

The sequence does not converge to x = -2

g(x) = 1 + x - , = 1.6

1

= 1.6

= 1.96

= 1.9996

= 1.99999996

The sequence converge to x = -2

Aitken formula for accelerating convergence

= - , n = 0 , 1 , 2 , 3 , ….

Example Find the root of f(x) = - x -3 in [2,3] , = 2.5

g(x) =

= 2.5

= g() = 2.40625

= g() = 2.35828

= - = 2.3080157

= g() = 2.3288

= - = 2.3042979

Consider the following system

(x,y) = 0 , (x,y) = 0

1) Fixed point iterative theorem

= ()

= () , , n = 0 , 1 , 2 , ….

The condition for converges is

L = max{+ , 1

Stopping condition and

Example

(x,y) = + -4 ,(x,y) = y - , = (1,1)

X = = (x,y)

Y = = (x,y)

L = max{+ , } = max{+ , }

L = max{+ , }= max{ , } = 1

= () = 1

= () =

= () =

= () =