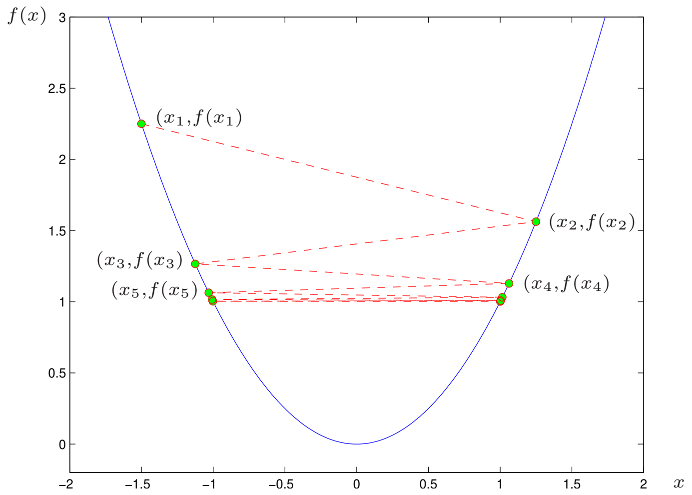
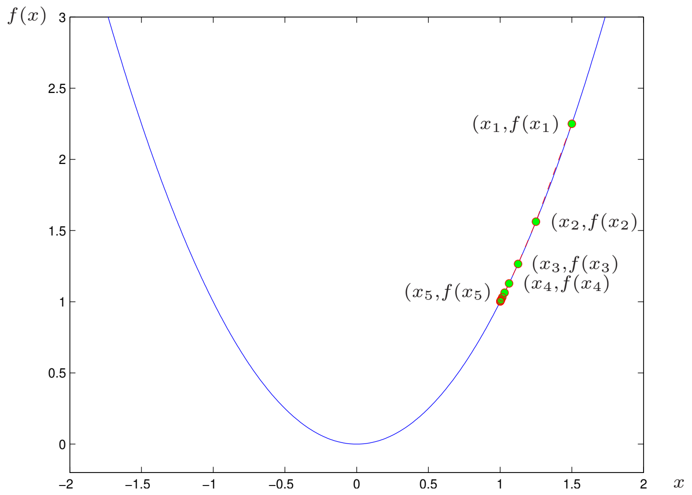
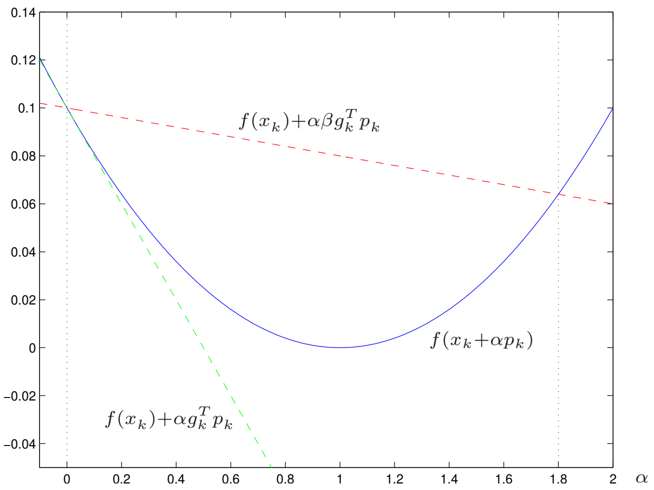

$f(x)$
3
2.5
2
1.5
1
0.5
0
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
x
$(x_1, f(x_1))$
$(x_2, f(x_2))$
$(x_3, f(x_3))$
$(x_4, f(x_4))$
$(x_5, f(x_5))$



$f(x)$
3
2.5
2
1.5
1
0.5
0
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
x
$(x_1,f(x_1))$
$(x_2,f(x_2))$
$(x_3,f(x_3))$
$(x_4,f(x_4))$
$(x_5,f(x_5))$



0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
−0.02
−0.04
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
α
$f(x_k)+\alpha\beta g_k^T p_k$
$f(x_k+\alpha p_k)$
$f(x_k)+\alpha g_k^T p_k$