

Computer Science/Mathematics 555
Assignment Two
Due 3 October 2003

Do problems 3.1 and 3.9 from the end of Chapter 3 in MATLAB please.

To do these problem, you need to pass a function as an argument. In MATLAB that is done as follows. Suppose you have the Rosenbrock function in a file

```
function fx=rosenbrock(x)
```

its gradient in

```
function gradfx=grad_rose(x)
```

and its Hessian in

```
function Hfx=Hess_rose(x) .
```

Let `Line_search` be one of your minimization functions.

```
function xstar= Line_search(f,gradf,Hess,x0,tol)
```

When calling your function you would say

```
>> f=@rosenbrock ;  
>> gradf=@grad_rose ;  
>> Hess=@Hess_rose ;  
>> xstart= Line_search(f,gradf,Hess.x0,1e-5) ;
```

where tol is the tolerance for $\|\mathbf{x}_{k+1} - \mathbf{x}_k\|_2$.

Inside the function, you evaluate the function, gradient, and Hessian from

```
fx=feval(f,x);
```

```
gradfx=feval(gradf,x);
```

```
Hessfx=feval(Hess,x);
```

Of course, you only need the Hessian for the full blown Newton method.