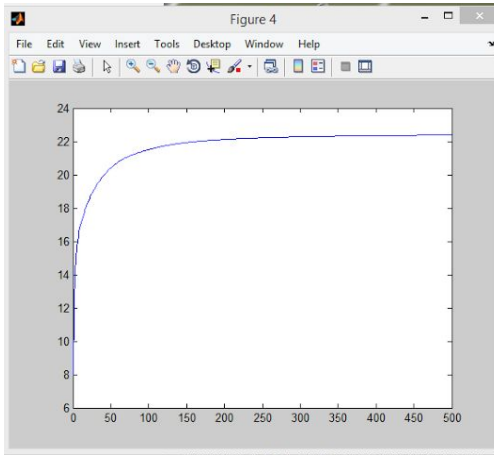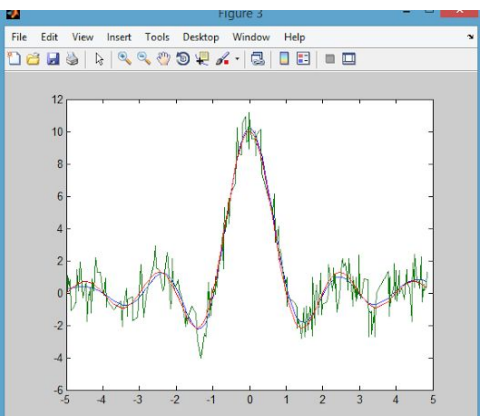BMML Homework 3
Problem 2
DataSet 1
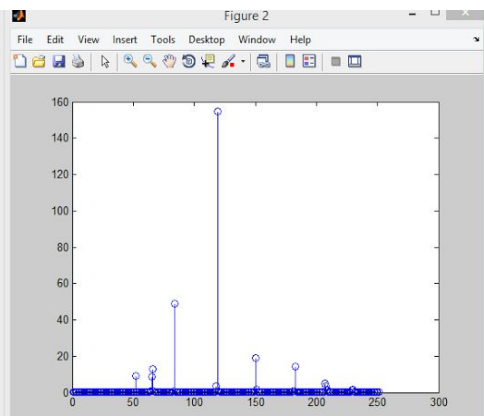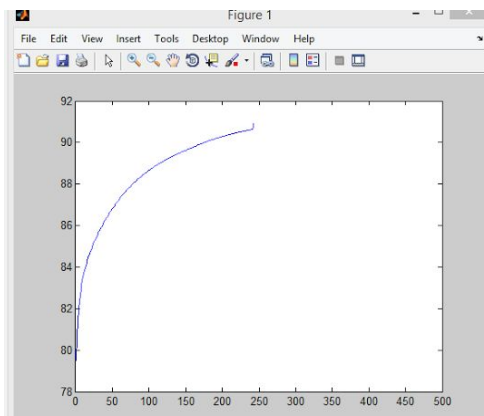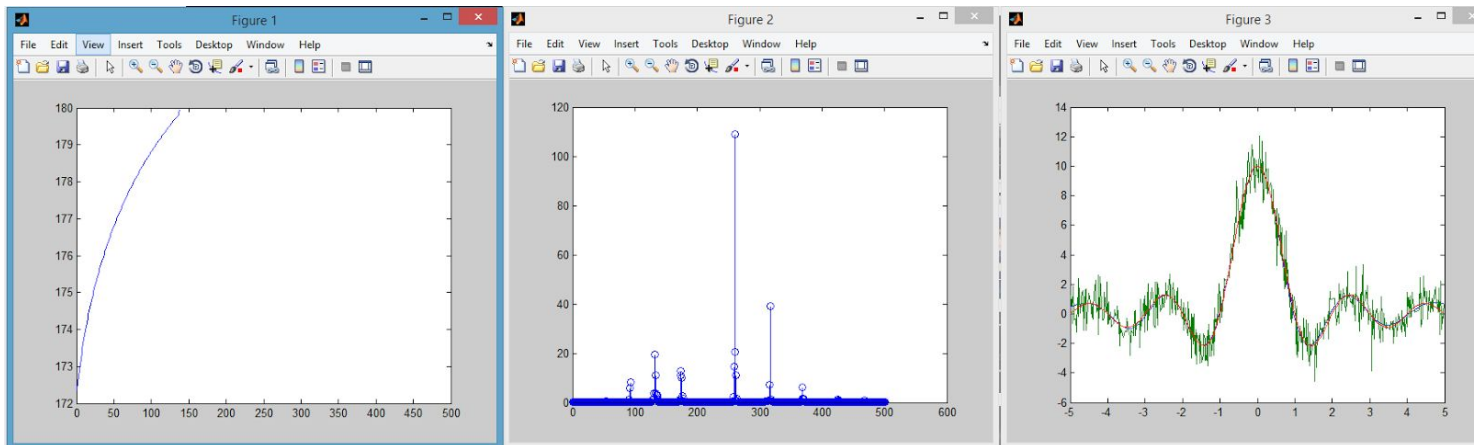   a) b) d)
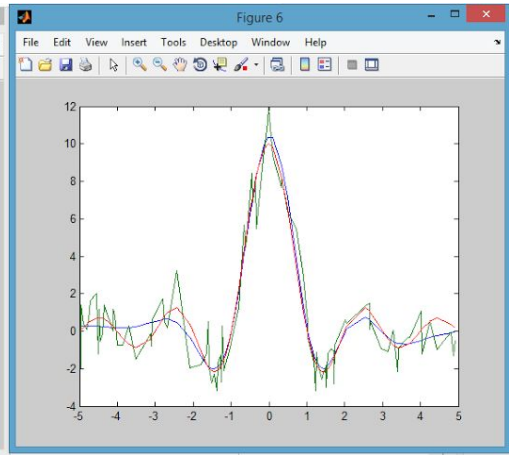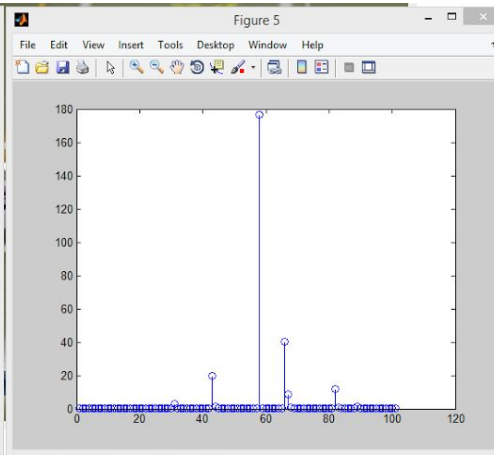
c) 1.0798

Data Set 2
a)b)d)

As you can see, it doesn't converge as t increases. I think modifications can be made to the objective function to fix this, as some values cause L to just go to infinity after a while
c) 0.8994

Data set 3
a)b)d)

c)
0.9781

This one doesn't converge either…

I used this as the main loop for my objective function

```
for k = 1:d
    b(k) = b0t(k) + 0.5*mumusigma(k,k);
    Elnpw = Elnpw + 0.5*(psi(a(k))-log(b(k))) - 0.5*a(k)./b(k)*mumusigma(k,k);
    Elnpalpha = Elnpalpha + (a0 - 1)*(psi(a(k))-log(b(k))) - b0*a(k)/b(k);
    Elnqalpha = Elnqalpha + log(gamma(a(k))) + (1 - a(k))*psi(a(k)) + a(k) - log(b(k));
    Eqalpha(k) = a(k)./b(k);
end
```


```
Elnpy = N/2*(psi(e)-log(f)) - 0.5*e/f*yxitmu;
Elnplambda = (e0 - 1)*(psi(e)-log(f)) - f0*e/f;
Elnqlambda = e - log(f) + (1 - e)*psi(e) +  gammaln(e);
Elnqw = 0.5*log(det(sigma));
```



```
L(i) = Elnpy + Elnpw + Elnpalpha + Elnplambda + Elnqw + Elnqalpha + Elnqlambda;
```