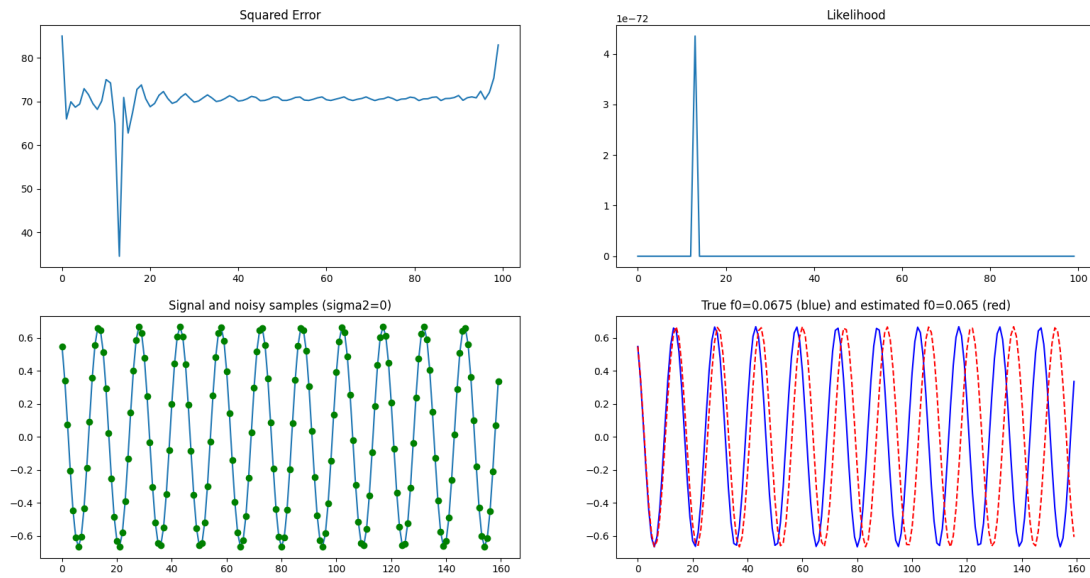I tested samples, noise and error parameters by hand
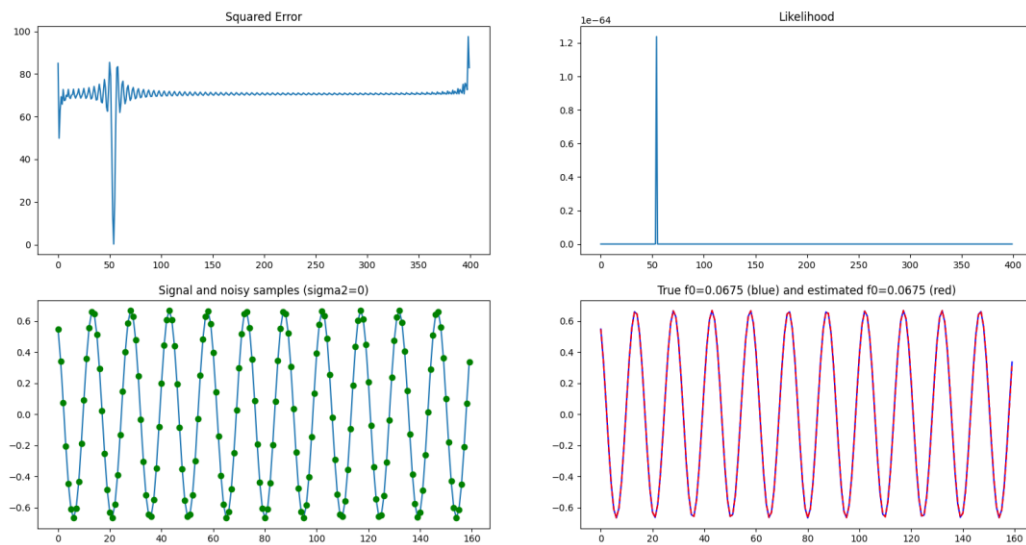
a)   100 samples, no noise and no error:
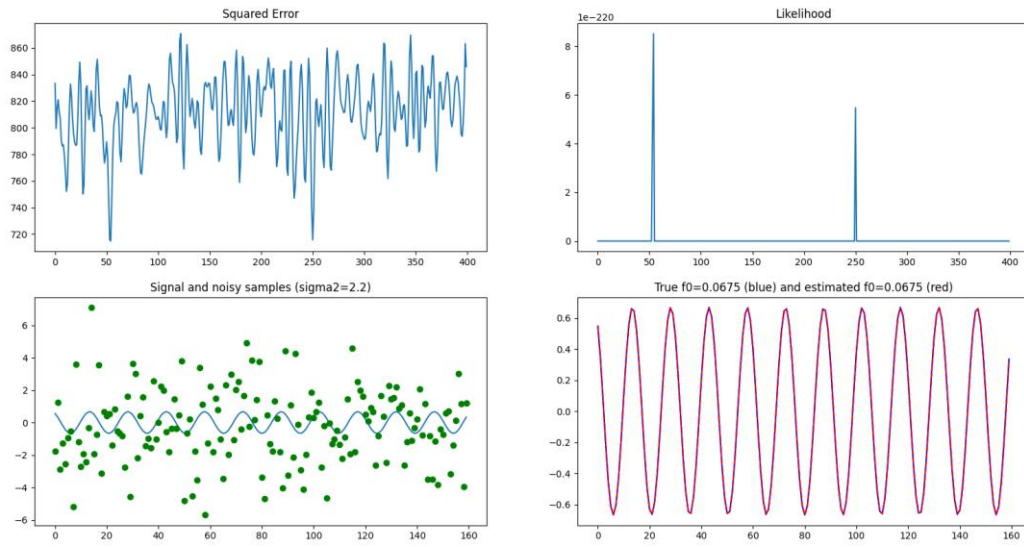

b)   400 samples, no noise and no error:
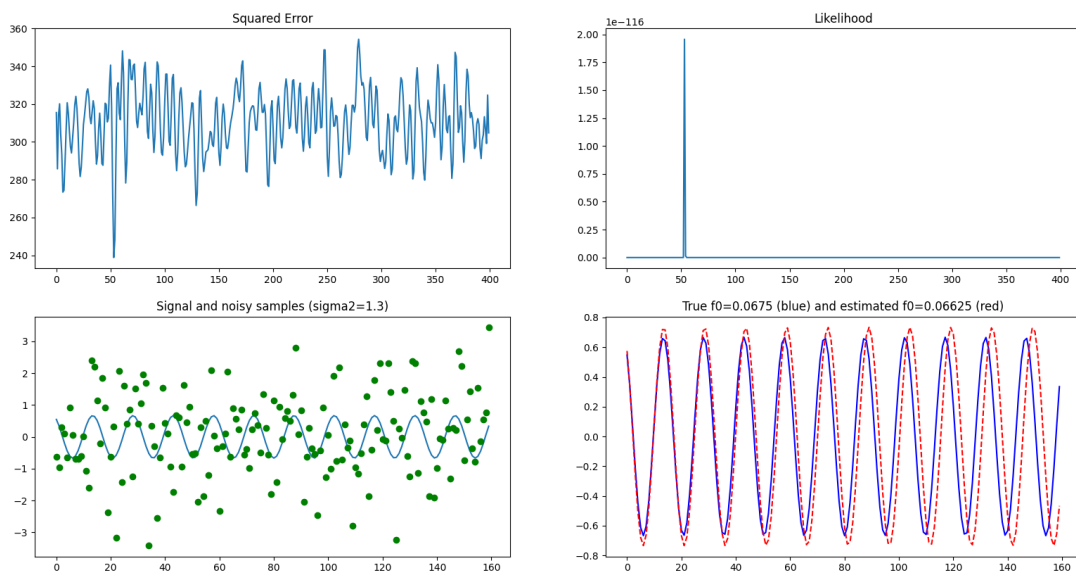
c) 400 samples, noise=2.2, no error:

With noise=2.3, estimated frequency was wrong.

d) 400 samples, noise=1.3, error=1.1:

With noise=1.4, estimated frequency was wrong.