1)

N=12 y=2.04

H=8 Y=2.63

N=12 y=2.25

H=8 Y=2.75

H=9 Y=3.89

2)

A) var(z1)=var(z2)=11

B) Cov(z1,z2)=11-y(0)=11-7.875=3.125

C) var(0.8z1+0.2z2 )=0.8^2var(z1)+0.2^2var(z2)+2*0.8*0.2*cov(z1,z2)=8.48

Cov(z3,z1)=Cov(0.8z1+0.2z2,z1)=0.8cov(z1,z1)+0.2cov(z2,z1)=0.8*11+0.2*3.125=9.425

D) Cov(z3,z4)=Cov(0.8z1+0.2z2, 0.4z1+0.6z2)

=0.8*0.4cov(z1,z1)+0.2*0.4cov(z2,z1)+ 0.6*0.8cov(z1,z2)+ 0.2*0.6cov(z2,z2)

=0.8*0.4*11+0.2*0.4*3.125+0.6*0.8*3.125+0.2*0.6*11=6.59

3)

H=sqrt(10*10+30*30)=31.6228m

Thetap=arctan(10/30)=18.43

Selon le sens d'orientation des vecteur , theta=thetag+thetap=30+18.43=48.43

Atheta=100*60/sqrt(60^2*cosd(48.43)^2+100^2*sind(48.43)^2)=70.7981

Y=13+17*(1.5*31.62/70.79-0.5*31.62^3/70.79^3)=23.63%^2

4)

A7, B1, C3, D6, E5, F2, G8, H9, I4

5)

C0=2%^2, C=15%^2, a45=120m, a135=40m, exponentiel ou sphérique

6)

C0=2, C=12, a55=150, a145=50, gaussien