

For **3a**,

I have calculated mean and variance for height, weight and age through 3b. Here is the output:

	mean_height	var_height	mean_weight	var_weight	mean_age	var_age
men	178.2857	63.5714	80	103	28.8571	4.1429
women	163.7143	83.2381	56.2857	81.2381	30.2857	7.9048

Now, calculating the parameters we get as follows:

$P(h_x|W)$ , where  $h_x$  is any given height for  $x$ . Similarly, calculated for weight and age.

$P(h_x|W) =$

0.0430
0.0392
0.0204
0.0089

$P(w_x|W) =$

0.0414
0.0051
0.0139
2.7685e-04

$P(a_x|W) =$

0.1020
0.1179
0.1412
0.1278

$P(h_x|M) =$

0.0062
0.0218
0.0460
0.0489

$P(w_x|M) =$

0.0011
0.0348
0.0242
0.0348

$P(a_x|M) =$

0.1794
0.0595
0.1675
0.1956

Now, we calculated  $P(W|x)$  and  $P(M|x)$ ,

$P(W|x) =$

0.9930
0.3440
0.1767
9.4387e-04

$P(M|x) =$

0.0070
0.6560
0.8233
0.9991

Comparing this outputs one by one we got the predictions as,

(162,53,28)	W
(168,75,32)	M
(175,70,30)	M
(180,85,29)	M

For **3c**,

we calculated  $P(W|x)$  and  $P(M|x)$ ,

$P(W|x) =$

0.9960
0.2094
0.2029
0.0014

$P(M|x) =$

0.0040
0.7906
0.7971
0.9986

Comparing this outputs, we got the same result as in 3b

(162,53,28)	W
(168,75,32)	M
(175,70,30)	M
(180,85,29)	M

For 3d,

After comparing the output of 3b and 3c we can see that there is no change in predictions. Further analyzing the data we can also see that there is no big differences in average age values in men and women than what we can see the difference in heights and weights. Eliminating the age value failed to create any change in predictions, since the heights and weights of men and women are sparsely distributed making easy for prediction.

