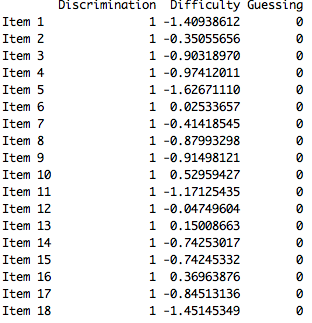
**R- Computer - Lab #2**

8,6 or 21.5/25

**Student:** Erna Guðrún Björnsdóttir

**Partner :** Guðrún Alma Einarsdóttir

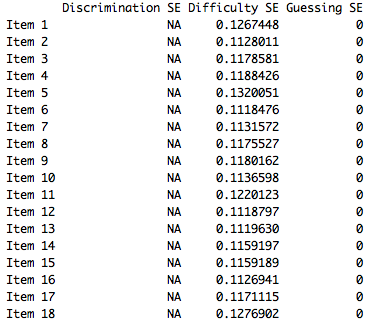
1. ***A)*** Item number 5 was the easiest, -1.626 and item number 10 was the hardest 0.539.



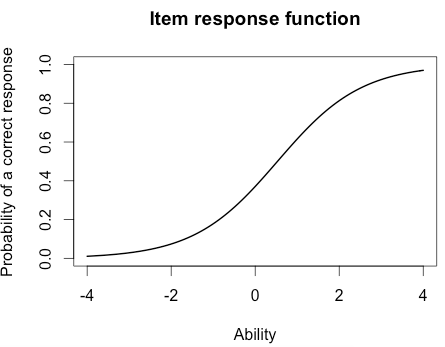
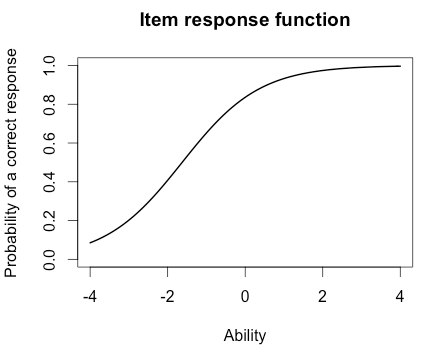
***B)*** Spot where the probability of correctly answering the question 5 is between -1,88 and -1,37 with 95% confident. -1. Interpretation is incorrect, please see the answer key

***-1,63 - 1.96 x 0,13 = -1,88***

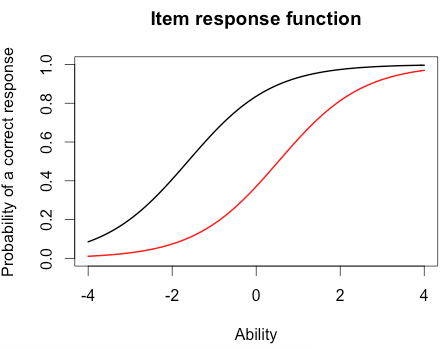
***-1,63 + 1.96 x 0,13 = -1,37***



***C)*** Item 5 - Easiest Item 10 - Hardest



Item 5 is the black line and item 10 is the red line.



***D)*** For the easiest item it would be around 0.8 and for the hardest item about 0.3.

***E)*** **For the person who did best on the test his score was 3.99**

> which.max(est\_abl$est) # Prints out the person with the maximum score

[1] 49

est sem n

49. 3.999921 2.204373 18

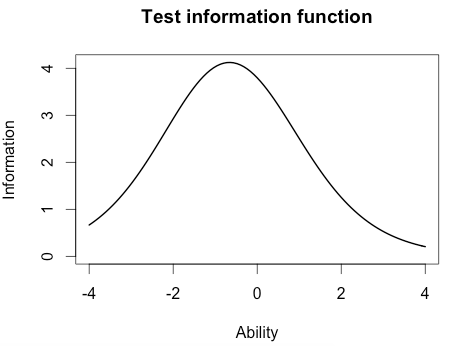
**For the person who did worst on the test his score was -3.99**

> which.min(est\_abl$est) # Prints out the person minimum score

[1] 393

est sem n

393. -3.999947 1.225286 18



***F)*** The person that did best on the test, his ability estimate was between 0,322 and 8,30 with 95% confidence. -1, interpretation incorrect, please see the answer key

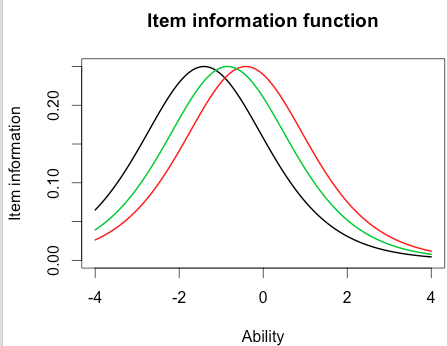
***3.99 - 1.96 x 2,2 = -0,322***

***3.99 + 1.96 x 2,2 = 8,30***

1. ***A)*** I chose item number 1, 7 and 17.

***B)*** Plot for item 1= black, 7 = red and 17 = green.

> plot(iif(est\_params[c(1,7,17),]), co = NA)

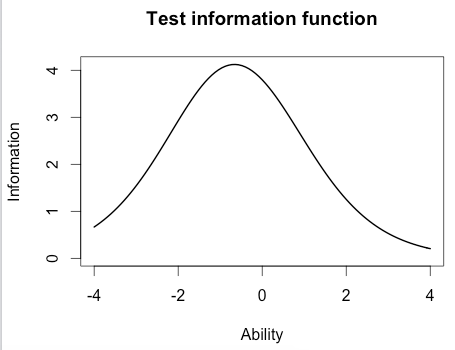


***C)*** **Same =** Most information about these items are located at -2 and 0.

**Different =** All the items have different ability estimate.

Item’s don’t have ability estimates. You should discuss shape and location of this item. Shapes are the same, location different. -1

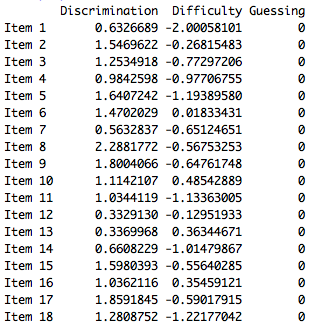
***D)*** plot(tif(est\_params))



***E)*** The majority of the information is located between -2 and 1

1. ***A)*** Item 8 has the highest discrimination 2.288 and item 12 has the lowest discrimination 0.332.

***B)*** No not quite, item 10 is still the hardest but item 1 is now the easiest.



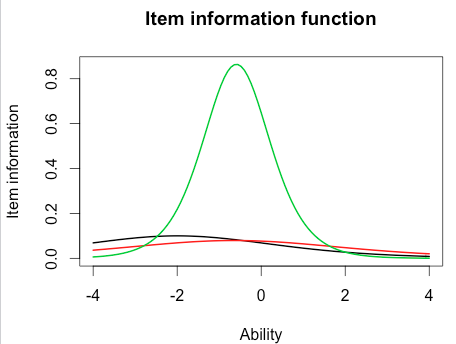
***C)*** The correlation between the ability estimates on the Rasch model and 2-PL is 0.97. If you are high in ability on the Rasch model you will also be high in ability on the 2-PL model because the correlation between the two models is very high.

> # Correlation between the ability estimates

> cor(twopl\_abl$est,est\_abl$est)

[1] 0.9709497

***D)*** > plot(iif(twopl\_params[c(1,7,17),]), co = NA)



E) The items do not have the same discrimination and difficulty.

In the 2-PL model we have the discrimination factor that helps us discriminate more easily between items information and ability estimate, but the Rasch model only tells us about item location/difficulty.

This is true but what specifically about the shape and location of these graphs is different between the models. Yes more parameters are being estimated but how does that manifest itself in these plots? -.5