Application exercise 7.3: Prediction intervals

Submit your responses on Sakai, under the appropriate assignment. Only one submission per team is required. One team will be randomly selected and their responses will be discussed.

Nature or nurture

The model for predicting IQ scores of foster twins based on IQ scores of biological twins is as follows.

```
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      9.20760    9.29990   0.990    0.332
bioIQ            0.90144    0.09633   9.358  1.2e-09

Residual standard error: 7.729 on 25 degrees of freedom
```

1. Calculate (using formulas) a 95% prediction interval for the average IQ score of foster twins whose biological twins have IQ scores of 100 points. Note that the average IQ score of 27 biological twins in the sample is 95.3 points, with a standard deviation is 15.74 points.
2. Confirm that this interval compares to the corresponding confidence interval as you would expect, i.e. wider, narrower, etc.
3. Now calculate the same interval using R. Remember you need to first load the data, then fit and save the model, and then finally use this mode, and the new data point to make your prediction. Refer to course slides for the necessary code.