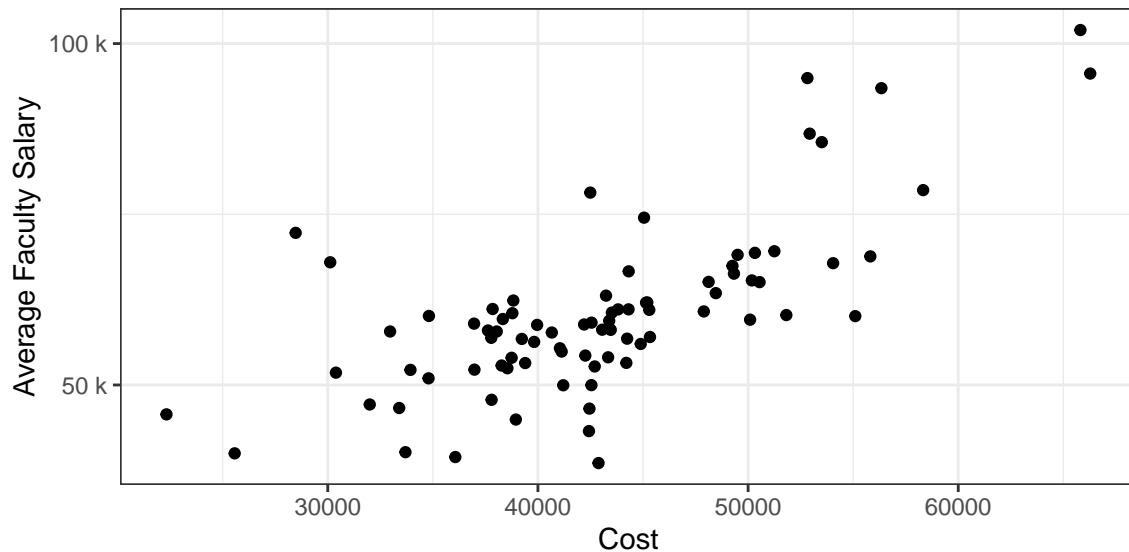


Question 5

This question again involves the college dataset that we have been using in class, investigating the relationship between college cost and average faculty salary. For this question, we have included only private colleges located in the midwest.



This is the Pearson correlation coefficient (r) for the data in the scatterplot:

```
## [1] 0.7067809
```

The *simple linear regression* model fit below describes the relationship between the single explanatory variable “Cost” with the response variable “Avg_Fac_Salary” for this :

```
lm(Avg_Fac_Salary ~ Cost, data = q3) %>% coef() %>% round(digits=2)
```

```
## (Intercept)      Cost
##   13061.34      1.10
```

Part A Describe the relationship between Cost and Average Faculty Salary for midwest private colleges. (1-2 complete sentences)

Part B State the linear regression equation using the R output from the previous page. Include the variable context.

Part C Interpret the coefficient for the variable “Cost” in the regression equation. (1 complete sentence)

Part D Would it be appropriate to interpret the intercept in the linear regression equation? If yes, interpret the value of the intercept. If not, explain why. (1-2 complete sentence)

Part E Use the linear regression equation to predict the Average Faculty Salary of Grinnell College which has a Cost of \$65,814.

Part F The actual Average Faculty Salary at Grinnell is \$101,979. Calculate the residual for Grinnell using your prediction in **Part E**. (If you were unable to finish Part E, you may use the value of \$80,000 for the prediction)