

# DM-Spring-2020-Q5-Grade

93.75% (15/16)

- ✓ 1. In the multiple linear regression, we assume that...
- ☒ A The number of observations is much larger than the number of variables ( $n \gg p$ )
  - ☐ B The number of observations is slightly larger than the number of variables ( $n > p$ )
  - ☐ C The number of observations equals than the number of variables ( $n = p$ )
  - ☐ D The number of observations is less than the number of variables ( $n < p$ )
  - ☐ E It is not important
  - ☐ F I do not know
- ✓ 2. The way of solving the problem of a large number of variables is...
- ☒ A Subset Selection & Shrinkage (Regularization)
  - ☐ B Shrinkage (Regularization) & Maximum Likelihood estimation
  - ☐ C Dimension Reduction & OLS estimation
  - ☐ D I do not know
  - ☐ E The absence of the right answer
- ✓ 3. The bias of an estimator (e.g.  $\hat{z}$ ) equals
- ☒ A  $E(\hat{z}) - z$
  - ☐ B  $E(\hat{z}^2) - [E(z)]^2$
  - ☐ C  $[E(\hat{z}^2) - E(z)]^2$
  - ☐ D  $E(\hat{z}^2)$
  - ☐ E I do not know
- ✓ 4. The main idea of regularization is
- ☒ A To introduce a small amount of bias in order to have less variance.
  - ☐ B To introduce a small amount of variance in order to have less bias.
  - ☐ C To introduce a small amount of variance and bias in order to have less bias.
  - ☐ D I do not know

✓ 5. With which function we can show regularization in R

- ☒ A glmnet()
- ☐ B regular()
- ☐ C lm()
- ☐ D glm()
- ☐ E I do not know

✓ 6. How the tune of any parametr can be made

- ☒ A using Cross validation
- ☐ B It is impossible
- ☐ C I do not now
- ☐ D using larger sample
- ☐ E only having population

✓ 7. Elastic Net is

- ☒ A the combination of L1 and L2 regularization
- ☐ B the combination of L2 and L3 regularization
- ☐ C is independent from other types of regularization
- ☐ D I do not know
- ☐ E not a type of regularization

✗ 8. Regularization is used only for

- ☐ A Poisson Regression
- ☒ B Linear Regression
- ☐ C Logistic Regression
- ☐ D any regression
- ☐ E I do not know

✓ 9. Regularization can solve the problem of

- ☐ A heteroscedasticity
- ☒ B multicollinearity
- ☐ C autocorrelation
- ☐ D I do not know

- ✓ 10. As a result of regularization, we will have
- ☒ A smaller slope than in case of OLS
  - ☐ B larger slope than in case of OLS
  - ☐ C the slope remains the same
  - ☐ D I do not know
- ✓ 11. The ridge coefficient estimates shrink towards zero
- ☒ A when lambda increases
  - ☐ B when lambda decreases
  - ☐ C when lambda = 0
  - ☐ D I do not know
- ✓ 12. Which one can shrink the slope all the way to 0?
- ☒ A Lasso
  - ☐ B Ridge
  - ☐ C Regression
  - ☐ D I do not know
- ✓ 13. When lambda = 0, we have
- ☐ A Ridge
  - ☐ B Lasso
  - ☐ C EL
  - ☒ D Regression
  - ☐ E I do not know
- ✓ 14. When alpha = 0, we have
- ☒ A Ridge
  - ☐ B Lasso
  - ☐ C EL
  - ☐ D Regression
  - ☐ E I do not know

✓ 15. Which function can help to perform cross-validation for regularization in R?

- ☒ A `cv.glmnet()`
- ☐ B `cros_val()`
- ☐ C `glmnet(method = "cv")`
- ☐ D I do not know

✓ 16. Why we use `set.seed()` in R?

- ☒ A To have universal result
- ☐ B To perform better result
- ☐ C To have random models
- ☐ D I do not know