

Practice Final Exam:
MLDS 400 Fall 2023

1. Consider the following 5 samples and 3 features:

X1	X2	X3
182	92	7.5
176	94	7.3
null	93	5.5
234	104	6.7
208	113	6.2

- Build a regression model to impute the missing value
- Use PMM with $K=1$ to adjust your answer to part a).

2. Use a QQ-plot to qualitatively test if [9,10,10.5,11.5,12,13,14] is normally distributed.

3. Hand compute the 4th standard moment of the following feature: [1,2,3,4,6,7]. 4th standard moment is defined as $E[(x - \mu)^4]/\sigma^4$, where μ is the mean, and σ is standard deviation.

4. Consider the function $f(w_1, w_2) = x_1 w_1 + e^{x_2} w_2$,

- Compute the gradient of this function.
- What is the average gradient for samples $(x_1, x_2) = (4,1)$ and $(3,2)$?

5. Suppose the ground truth is [5, 6, 7, 8, 9], and the prediction of your regression model is [5.5, 6.1, 7.9, 8.6, 9.2], compute the squared loss.