Name:

Short Quiz 3B

13 October 2025

Question 1: A classifier has the following confusion matrix $\begin{pmatrix} \text{TN} = 50 & \text{FP} = 18 \\ \text{FN} = 2 & \text{TP} = 18 \end{pmatrix}$. Compute its recall and its precision.

Answer: recall $= \frac{\text{TP}}{\text{TP+FN}} = \frac{18}{18+2} = 0.9$, precision $= \frac{\text{TP}}{\text{TP+FP}} = \frac{18}{18+18} = 0.5$.

Question 2: What is the mean square error of a predictor f for test data $(x_1, y_1), \ldots, (x_T, y_T)$?

Answer:

$$\frac{1}{T}\sum_{t=1}^{T}(f(x_t) - y_t)^2.$$

Question 3: True or false? Circle the right answer.

T	F	A small recall means that the classifier outputs a lot of false negatives.
T	F	Polynomial regression of degree δ with p variables can be seen as a linear regression problem with $p \times \delta$ variables.
T	F	To have a unique ERM in linear regression for the quadratic cost, it is necessary to have more data than variables (i.e. $n \geq p$).

Answer: True — True — True.