9.4 Review Questions

9.4.R1

1/1 point (graded)

Recall that we obtain the ROC curve by classifying test points based on whether $\hat{f}(x) > t$, and varying t.

How large is the AUC (area under the ROC curve) for a classifier based on a completely random function $\hat{f}(x)$ (that is, one for which the orderings of the $\hat{f}(x_i)$ are completely random)?

0.5

✔ **Answer:** 0.5

0.5

Explanation

If $\hat{f}(x)$ is completely random, then $\hat{f}(x_i)$ (and therefore the prediction for y_i) has nothing to do with y_i. Thus, the true positive rate and the false positive rate are both equal to the overall positive rate, and the ROC curve hugs the 45-degree line.

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Answers are displayed within the problem