

STUDENT: \_\_\_\_\_

MASTER: \_\_\_\_\_

**Ex. 1** — What are the main differences between PAC learning and Agnostic PAC learning?

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**Ex. 1** — Why is the learning framework called “probably approximately correct?”

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**Ex. 1** — Consider an input set  $\mathcal{X}$  and the class of all binary functions over  $\mathcal{X}$ , that is  $H = \{h \text{ such that } h : \mathcal{X} \rightarrow \{0, 1\}\}$ .  
When is this class PAC-learnable and why?

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**Ex. 1** — What is the bias-complexity tradeoff? Why is it interesting for machine learning?

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**Ex. 1** — What is a convex optimization problem and why is of interest for machine learning?

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**Ex. 1** — Mention at least one technique for solving the ERM problem for half-spaces with a zero-one loss function. How does such a technique work?

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**Ex. 1** — Mention at least one technique for solving the ERM problem for half-spaces with a squared-loss function. How does such a technique work?

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**Ex. 1** — Why the ERM associated to the logistic regression is said to be a maximum likelihood estimator?



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**Ex. 1** — How does boosting deal with the bias-complexity tradeoff?

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**Ex. 1** — What is the fitting-stability tradeoff? How does the regularization parameter of Regularized Loss Minimization affect this tradeoff?