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## Exercise: Choice of representations

(1/1 point)

We wish to estimate an unknown quantity  $\Theta$ . Our measuring equipment produces an observation of the form  $X = \Theta^3 + W$ , where  $W$  is a noise term which is small relative to the range of  $\Theta$ . Which type of linear estimator is preferable in such a situation?

☐  $\hat{\Theta} = aX + b$

☐  $\hat{\Theta} = aX^3 + b$


☒  $\hat{\Theta} = aX^{1/3} + b$  ✓

Answer:


If the noise  $W$  were completely absent, we would estimate  $\Theta$  by letting  $\hat{\Theta} = X^{1/3}$ . In the presence of small noise, our estimator should again have a similar form, which argues in favor of the third option.

*You have used 1 of 1 submissions*


**Unit overview****Lec. 14:  
Introduction to  
Bayesian inference**

Exercises 14 due Apr  
06, 2016 at 23:59 UTC 


**Lec. 15: Linear  
models with  
normal noise**

Exercises 15 due Apr  
06, 2016 at 23:59 UTC 


**Problem Set 7a**

Problem Set 7a due  
Apr 06, 2016 at 23:59  
UTC 


**Lec. 16: Least  
mean squares  
(LMS) estimation**

Exercises 16 due Apr  
13, 2016 at 23:59 UTC 

**Lec. 17: Linear  
least mean  
squares (LLMS)  
estimation**

Exercises 17 due Apr  
13, 2016 at 23:59 UTC 

**Problem Set 7b**

Problem Set 7b due  
Apr 13, 2016 at 23:59  
UTC 

**Solved problems****Additional  
theoretical  
material****Unit summary**

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