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## Sketching Wave Functions Pretest

University of Colorado

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Please type your name in the form: Last, First:

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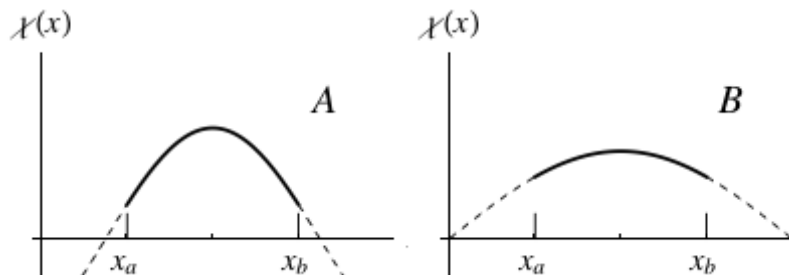
**NOTE!!** Please type in your CU userid (that's the username you use to log in to CULearn. We do NOT want your password. It probably looks like your last name, perhaps with a few extra characters. Note that it is definitely NOT your numerical (9 digit) student ID!!

**This script cannot "error check", you have to be sure you type it in correctly! Thanks**

Please type your CU userid:

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In the two sketches below, we show the ground state wave functions of electrons trapped in two different wells. (The wells extend beyond points  $x_a$  and  $x_b$ , but we only *show*  $\chi(x)$  in this limited region.) The potential  $V(x) = 0$  in the region between  $x_a$  and  $x_b$  in both cases, but has different forms elsewhere.



Q1a: Which electron has a higher kinetic energy in the region between  $x_a$  and  $x_b$ ?

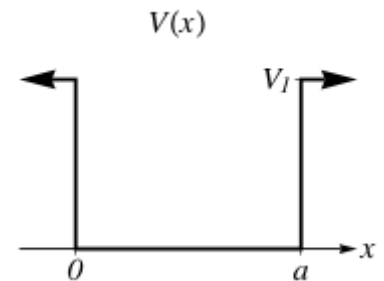
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Select one...

Q1b: Briefly explain your reasoning

Required.

Q2a: The figure to the right shows a potential well where  $V(X) = 0$  for  $0 < x < a$  and  $V(X) = V_1$  everywhere else. We want to place an electron in this well in its ground state (lowest energy eigenstate). What can you say about the energy of this electron as the value,  $V_1$ , increases?



Required.

Select one...

Q2B: Briefly explain your reasoning

Required.

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Submit responses

**Questions or Comments?**

Contact the 123 tutorial pretest coordinator at [uwttl123@u.washington.edu](mailto:uwttl123@u.washington.edu)

