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## Relating Classical and Quantum Mechanics Pretest

University of Colorado

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Required.

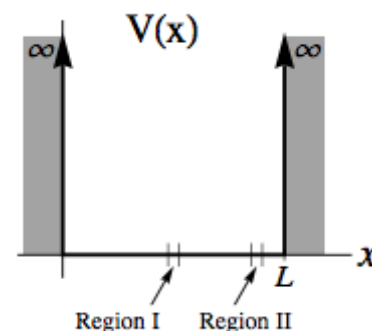
**NOTE!!** Please type in your CU userid (that's the username you use to log in to CULearn. We do NOT want your password. It probably looks like your last name, perhaps with a few extra characters. Note that it is definitely NOT your numerical (9 digit) student ID!!

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Please type your CU userid:

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A particle with non-zero total energy is confined to an infinite square potential well. The graph of that potential well is shown at right. Two regions of equal width are marked on the graph. Region I is located exactly in the center of the well. Region II is to the right of region I as shown.



A) 1. This system is analyzed, and using that analysis it is predicted that the time-averaged probability of finding the particle in region I will be greater than the time-averaged probability of finding the particle in region II.

Q1: a) Could this analysis have been done correctly using classical

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Required.

Select one...

Explain your reasoning.

Required.

Q2: a) Could this analysis have been done correctly using quantum mechanics?

Required.

Select one...

b) If so, give an example of a state consistent with this prediction. If not, explain why not.

Required.

B) This system is reanalyzed, and using that analysis it is predicted that the time-averaged probability of finding the particle in region I will be equal to the time-averaged probability of finding the particle in region II.

Q3: a) Could this analysis have been done correctly using classical mechanics?

Required.

Select one...

b) Explain your reasoning:

Required.

Q4: a) Could this analysis have been done correctly using quantum mechanics?

Required.

b) If so, give an example of a state consistent with this prediction. If not, explain why not.

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)

