Physics 23 Problem Set 5

Harry Nelson

Due Monday, October 29

Please make your work neat, clear, and easy to follow. It is hard to grade sloppy work accurately. Generally, make a clear diagram, and label quantities. Derive symbolic answers, and then plug in numbers after a symbolic answer is available.

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1. Use the substitutions:

$$\begin{aligned} \sin x &= \frac{1}{2i}(e^{ix} - e^{-ix}) \\ \cos x &= \frac{1}{2}(e^{ix} + e^{-ix}) \end{aligned}$$

   on both left and right-hand sides of the following equation to show that they are equal:

$$\sin a + \sin b = 2 \sin \frac{1}{2}(a+b) \cos \frac{1}{2}(a-b)$$

2. 16.62
3. 17.80
4. 17.82
5. 17.114
6. 17.126
