

Physics 564, Spring 2024
Homework assignment 9
Due 6 May

Remember that your homework solutions must contain a description of what you are doing, and *not* just a list of equations.

1. In class, we showed that a potential

$$H' = \epsilon xy$$

could be solved exactly by a coordinate transformation $(x, y) \leftrightarrow (u, v)$ where (u, v) were rotated counter clockwise by 45° from (x, y) .

Solve the problem with perturbation theory to first order and show that the results are the same as the exact result also expanded to first order in ϵ .

2. *Griffiths* 7.4
3. *Griffiths* 7.9
4. *Griffiths* 7.12

You may want to read about how to “brute force” degenerate perturbation theory in 7.2.1

Also, do not forget that you can also turn in your next metacognitive exercise that same day.