Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Find the Wronskian $W(f, g)$ of the functions $f(t) = e^{-3t}$ and $g(t) = te^{-3t}$.

2. (a) Check that $y_1(t) = -\cos 5t$ and $y_2(t) = \sin 5t$ are solutions of $y'' + 25y = 0$.

   (b) Do they constitute a fundamental set of solutions?

3. (This is a bonus question!) Suppose that you are given two functions $f(t)$ and $g(t)$. If $W(f,g)(t) = 3e^{4t}$ and $f(t) = e^{2t}$, what is $g(t)$?