

Math 365: Honors Analysis I

Name: _____

Quiz 1 *September 10, 2000*

1. Solve the initial value problem $y^2 y'' = y'$, $y(0) = 1$, $y'(0) = 1$.

2. Suppose $\phi(x)$ is a solution to $y'' + e^x y' + xy = x$ whose graph is tangent to the line $y = 1$ at some point. Prove that $\phi(x)$ is constant.

3. Find the general form of a particular solution to $y^{(4)} - y = e^x + \sin(x)$.
(Do not solve for the constants.)

4. Use operator methods to find a particular solution to $y^{(100)} + y = x^{200}$.