

Quiz 9

The initial-value problem

$$y'' = 2 + y', y(0) = 1, y'(0) = -1$$

has a solution of the form

$$y = c_0 + c_1x + c_2x^2 + c_3x^3 + c_4x^4 + \dots$$

1. Find the infinite sum y
2. Prove that $y = e^x - 2x$

Hint: Recall that $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \frac{x^5}{5!} + \dots$

Explain your answers.