Quiz No.13

Find the solution of the differential equation that satisfies the given initial condition (Pr1-Pr4)

Problem 1: \( y' = x + 2 \quad y(1) = 5 \)

Problem 2: \( y' = y \quad y(0) = \pi \)

Problem 3: \( y' = xy + 2y \quad y(0) = 2 \)

Problem 4: \( 4yy' = e^{2x} \quad y(0) = \sqrt{2} \)
Problem 5: Which of the following first order differential equations are linear:
   a) \( y' = e^x + y \)
   b) \( y' = y + y'^2 \)
   c) \( \sin(y') = \cos(y + x) \)
   d) \( \frac{1}{y'-y} + \frac{1}{y'+y} = \frac{1}{y'+x} \)

Problem 6: 'Separate the variables' in the following first order linear differential equations:
   a) \( y' = f(x) \)
   b) \( y' = y^2 \)
   c) \( y = y'(1 + x) \)
   d) \( u' = 2 + 2u + t + tu \)

Problem 7: Compute the sum \( 1 + 2 + 3 + \cdots + 100 \)

Problem 8: What is the next number in the sequence:
   10, 40, 70, 100, 130, \ldots

Problem 9: What is the next number in the sequence:
   9, 6, 4, \frac{8}{3}, \ldots

Problem 10: What is the next number in the sequence:
   1, 1, 2, 3, 5, 8, 13, 21, 34, \ldots