1. (6 pts) Consider the differential equation
\[ \frac{d^4 y}{dx^4} - 5 \frac{d^2 y}{dx^2} - 36 y = 36x + \sin(x), \]
(a) Find the complementary solution,
(b) Find a particular solution using undetermined coefficients (annihilator approach).

2. (4 pts) solve
\[ xy'' + y' - \frac{1}{x} y = x. \]