

HOMEWORK 9
DIFFERENTIAL EQUATIONS
DUE 09-12

Show your work!

- (1) Consider the differential equation $\dot{y} = y - t$.
- (a) There is a solution to this differential equation of the form $y = At + B$. Find that solution; we'll call it y_p .
- (b) Erasing any terms that do not involve y gives the *associated homogeneous equation*:

$$\dot{y} = y - t \rightsquigarrow \dot{y} = y.$$

Find a non-0 solution of the associated homogeneous equation; we'll call it y_h .

- (c) Plug your formulas for y_p and y_h into the formula

$$y = y_p + Cy_h.$$

Verify that this new y is a solution of the original differential equation.

- (2) **Four** book problems: #1.3.6, 7, 13, 18.