

Suggested problems 2

Instructor: Alena Erchenko

1. Determine the order of the given differential equation

$$y'''' + 4y''' + 3y = t.$$

Also verify that the functions $y_1(t) = \frac{t}{3}$ and $y_2(t) = e^{-t} + \frac{t}{3}$ are solutions of the differential equation.

2. Draw the directional field for the differential equation

$$\frac{dy}{dt} = t^2 - y^2.$$

Hint: Use isoclines. Draw the integral curve through the point $(0, 0)$.