Read each problem **very carefully** before starting to solve it and do only what is asked.
Each problem is worth around 5 points. It is necessary to show **all** your work. Correct
answers without explanations are worth 0 points. GOOD LUCK!!

1. [6 points] Find the particular solution of the initial value problem

$$2y'' + 13y' + 15y = 0, \quad y(0) = 2, \ y'(0) = 4.$$

2. [6 points] Show that $y_1(t) = t^{-1}$ and $y_2(2) = t^{3/2}$ form a **fundamental set of solutions** of
the second order linear homogeneous differential equation

$$2t^2 y'' + ty' - 3y = 0, \quad t > 0.$$