<div align="center">Worksheet 2</div>

1. Consider the ODE

$$x'' + x' - 6x = 3t + 2.$$

   (a) Find all linear solutions.

   (b) Find all linear solutions of the associated homogeneous equation.

   (c) Find all solutions of the associated homogeneous equation that are of the form $\sin at$ or $\cos bt$.

   (d) Find all solutions of the associated homogeneous equation that are of the form e^{ct}.

   (e) Use the Wronskian test to check whether the solutions from the previous three items generate the general solution.

   (f) Find the general solution of $x'' + x' - 6x = 3t + 2$.