

Worksheet 1

MATH 33B

1. Solve the IVP $y' = te^{t^2}, y(0) = 1$.
2. Use separation of variables to solve the IVP $y' = ty, y(1) = 2$. Sketch the direction fields.
3. Use the method of integrating factors to solve the IVP

$$ty' + y = e^t, y(0) = 1.$$

4. Consider the nonhomogeneous linear differential equation

$$y' = 2y + 3t.$$

- (a) Solve the corresponding homogeneous equation.
- (b) Use undetermined coefficients to find a particular solution.
- (c) Find the general solution to the equation.