

Written HW2 – MATH 3504 Spring 2021

**Due by 27 January for timely completion credit**

The following initial value problems are separable. Solve them using the techniques covered in class. All final answers should be explicit (i.e. in the form “ $x(t) = \dots$ ”).

$$1. \begin{cases} x' = \frac{x^3}{t^2} \\ x(1) = 3 \end{cases}$$

$$2. \begin{cases} x' = \frac{e^t + e^{-t}}{x^2} \\ x(4) = 7 \end{cases}$$

$$3. \begin{cases} x' = \frac{1}{x \sin(e^t)} \\ x(2) = 11 \end{cases} \quad (\text{hint: do this one like Example 1.18})$$