

## Math 2080: Differential Equations

### Worksheet 2.1: Separation of variables

**NAME:**

1. The following problems are basic review of relevant algebra and calculus.

(a) Solve for  $t$  and simplify:  $3e^{-4t} = 5$ .

(b) Solve for  $t$  and simplify:  $e^{-\frac{1}{3} \ln t} = 3$ .

(c) Solve for  $t$  and simplify:  $(\frac{4}{3})^{-t} = 7$ .

(d) Evaluate  $\int \frac{1}{2t} dt$ .

(e) Evaluate  $\int \frac{1}{3-4t} dt$ .

2. Find the general solution to  $y' = 2y + 6$  using separation of variables.

3. Find the general solution to  $y' = ty$  using separation of variables.

4. Find the general solution to  $ty' = -2y$  using separation of variables.