Your Preferred Name

Student ID #

1. Solve

$$y' = t^{1-t} - (1 + \ln t)y, \qquad y(1) = \frac{1}{2}$$

where $t > 0$.

(Hint: $e^{t \ln t} = t^t$.)

2. Consider the differential equation

$$A'(x) = 0.3A(x) - 50, \qquad A(0) = 100.$$

Describe a physical situation modeled by this differential equation. Be sure to include the following: the units of x, A, A'; and physical meanings for the constants $0.3, 50, 100$. **Do not solve the DE.**