

Please show **all** your work! Answers without supporting work will not be given credit.  
Write answers in spaces provided.

Name: \_\_\_\_\_

1. [2 pts] Circle the technique you think is easiest to find the general solution of the differential equation:

$$\frac{dy}{dt} = -\frac{2}{3}y$$

**Don't Solve!**

- A) Exponential Growth and Decay Formula
- B) Separable Functions
- C) First-Order Linear Equations

2. [4 pts] What is the **integrating factor** of the following differential equation?

$$y' + (\cot(x))y = \sin^2(x)$$

$$u(x) = \underline{\hspace{10cm}}$$

3. [4 pts] What is the **integrating factor** of the following differential equation?

$$(x+1)\frac{dy}{dx} - 2(x^2+x)y = \frac{e^{x^2}}{x+1}$$

$$u(x) = \underline{\hspace{10cm}}$$