

NAME: \_\_\_\_\_

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## M427J Quiz 1

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**Problem 1.** [2 pts] Find the general solution of

$$\frac{d\alpha}{dt} = \beta(t)\alpha(t).$$

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**Problem 2.** [4 pts] Solve the initial value problem

$$tx'(t) + 2x(t) = \frac{1}{t \cos t}, \quad x(2\pi) = 1.$$

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**Problem 3.** [4 pts] Find the general solution of

$$\frac{y'}{t} - \cos^2(y)e^t = 0.$$