Name: ID #: Section #:

Q1) **Determine** whether the differential equation

$$\left(1 + \ln x + \frac{y}{x}\right) dx = (1 - \ln x)dy$$

is **exact,** and **Solve** it. **(3 points)**

Q2) Solve the initial value problem $y^{1/2}\dfrac{dy}{dx} + y^{3/2} = 1,\ y(0) = 4.$ **(3.5 points)**

Q3) A thermometer is taken from an inside room to the outside, where the air temperature is 5°F. After 1 minute the thermometer reads 55°F, and after 5 minutes it reads 30°F. What is the initial temperature of the inside room? **(3 points)**