

QUIZ 2

1. 6 points Solve the differential equation $\frac{dy}{dx} = x\sqrt{x} e^{y/2}$.

[You may leave the solution(s) in implicit form.]

2. 6 points Use Euler's method to compute the first two approximations (y_1 and y_2) to the initial value problem

$$y' = x - 2xy, \quad y(1) = 3,$$

with step size $dx = 0.25$.

3. 8 points Newton's Law of Cooling asserts that the rate of change of the temperature of an object is proportional to the difference between the surrounding temperature and the object's temperature.

A cold bottle of beer at 40°F is placed into a warm room at 70°F . Ten minutes later, the temperature of the beer is 48°F . Use Newton's Law of Cooling to find the temperature of the bottle of beer 25 minutes after the beer was placed into the room.

[You must show all your work.]