Math 220, Week 3 Thursday, Section 2.2, 2.3 Spring 2020, XT

2.2 Separable Equation

1. Solve the equation $\dfrac{dx}{dt} = \dfrac{t}{xe^{t+2x}}$

2. Solve the initial value problem

   (a) $\dfrac{1}{2}\dfrac{dy}{dx} = \sqrt{y+1}\cos x, \qquad y(\pi) = 0$

   (b) $x^2 dx + 2y dy = 0, \qquad y(0) = 2$

2.3 Linear Equation

1. Solve the equation

   (a) $\dfrac{dy}{dx} = x^2 e^{-4x} - 4y$

   (b) $x\dfrac{dy}{dx} + 3(y + x^2) = \dfrac{1}{x}$

2. Solve the initial value problem
   $\sin x \dfrac{dy}{dx} + y \cos x = x \sin x, \qquad y(\dfrac{\pi}{2}) = 2$