Math 2552 - Differential Equations **Homework 4**
Sections F1 – F4; L1 – L4
Georgia Institute of Technology, Fall 2015

Bernoulli Differential Equations

Solve the ODEs below.

1. $x\dfrac{dy}{dx} + y = y^2x^2 \ln x.$

2. $\dfrac{dy}{dx} - \dfrac{1}{x}y = 4x^2 \cos x \dfrac{1}{y};\ \ x > 0.$

3. $\dfrac{dy}{dx} - \dfrac{3}{2x}y = 6y^{1/3}x^2 \ln x.$

4. $y' + 2x^{-1}y = 6y^2x^4.$

5. $y' + 4xy = 4x^3y^{1/2}.$

6. $(x-1)(x-2)(y' - \sqrt{y}) = 2y;\ \ x > 2.$

7. $\dfrac{dy}{dx} - \dfrac{1}{(\pi-1)x}y = \dfrac{3}{1-\pi}xy^{\pi}.$

8. $y' + y\cot x = y^3 \sin^3 x;\ \ y(\pi/2) = 1.$

9. $2\dfrac{dy}{dx} + (\tan x)y = \dfrac{(4x+5)^2}{\cos x}y^3.$