MAT 235
Make Up Exam I

1) Solve the following differential equations.

a) $-\dfrac{x}{2}\dfrac{dy}{dx} + y = \sqrt{y}$ **(18 points)**

b) $\dfrac{dy}{dx} = \dfrac{4x + 3y^2}{2xy}$ **(18 points)**

c) $x\dfrac{dy}{dx} - y = x^2 + y^2$ **(18 points)**

2) Solve the initial value problem.

$\dfrac{dy}{dx} = \dfrac{x^3 - xy^2}{y^3 - x^2 y}$, $y(1) = \sqrt{3}$ **(23 points)**

3) Find the family of orthogonal trajectories to the given family of curves

$x^2 + y^2 + 2cy - 1 = 0$ **(23 points)**