Name: **Engineering Mathematics-II/ Midterm Exam** **Spring 2018**

Note: Show all work, clearly and in order, if you want to get full credit.

Q1 Let $(1+x^6)dy = x^5dx + x^5y^2dx$.

1. (5pts) Specify the type of the differential equation.

2. (20pts) Find the general solution.

Solution:

Q2 Let $2xy\dfrac{dy}{dx} = y^2 - 2x^3, \quad y(1) = 2$

1. (5pts) Specify the type of the differential equation.

2. (20pts) Find the solution.

Solution:

Q3 Let $\left[y(1+\frac{1}{x})+\cos y\right]\,dx+\left[x+\ln x-x\sin y\right]\,dy=0.$

1. (5pts) Specify the type of the differential equation.

2. (20pts) Find the solution.

Solution:

Q4 Let $y'+\tan(x)y=\cos^2 x.$

1. (5pts) Specify the type of the differential equation.

2. (20pts) Find the solution.

Solution: