First Midterm—Chapter 1

Total points: 100 points 2hours to do the work, Oct. 18, 2018

1. Solve the initial value problem.(10 points)

**→ + 5**

+

**→ + 8**

=

c=0

∴ **→ + 10**

1. Solve the initial value problem.(10 points)

*,*

**→ + 5**

**→ + 7**

**→ + 8**

**→ + 9**

∴ **→ + 10**

1. Test the **exactness** of the given ODE and solve the problem.(10 points)

**→ + 5**

**→ + 7**

**→ + 8**

**→ + 10**

1. Find an **integrating factor**, use it to find the general solute on of the differential equation, and then obtain the solution of the initial value problem. (20 points)

*；*



 **→ + 8**

 **→ + 10**







  **→ + 15**



G.S. : 

 **→ + 18**

代入



 **→ + 20**

1. Find the general solution of the given ODE. (20 points)

∴The given ODE is non-exact **→ + 8**

∴ **→ + 10**

∴

**→ + 13**

**→ + 15**

∴ **→ +16**

**→ + 18**

∴

**→ + 20**

1. Please show that the first order linear differential equation has a general solution, by the method of exact differential equation. (20 points)







 **→ + 8**

 **→ + 10**





 **→ + 15**

 **→ + 17**



 **→ + 18**

 **→ + 20**

1. Solve the differential equation. (10 points)





Let 



 **→ + 5**

 **→ + 8**

∴  **→ + 10**