

學號：

姓名：

國立中山大學 97 學年度第 2 學期資訊工程學系資工數學

Quiz #2

2009/03/11

Graph an approximate solution curve through the given point or point (x, y) by hand.

1.  $4yy' = -9x, (2, 2)$  (15%)

2.  $y' = 1 + y^2, (\frac{1}{4}\pi, 1)$  (20%)

Find a general solution. Show the steps of derivation.

3.  $y' + (x + 2)y^2 = 0$  (15%)

(背面尚有試題)

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Find the particular solution. Show the steps of derivation, beginning with the general solution.

4.  $e^{2x} y' = 2(x+2)y^3$ ,  $y(0) = \frac{1}{\sqrt{5}} \approx 0.45$  (20%)

5. (Mixing) A tank contains 800 gal of water in which 200 lb of salt is dissolved. Two gallons of fresh water runs in per minute, and 2 gal of the mixture in the tank, kept uniform by stirring, runs out per minute. How much salt is left in the tank after 5 hours? (30%)

Let  $y(t)$  denote the amount of salt in the tank at time  $t$ .