MATH 3803 – Final Exam
December 1999 – Answers

1. (a) $a(t) = e^{0.01(t+t^2)}$ (b) $I_4 = e^{.21} - e^{.13}$

   (c) $i_4 = e^{.08} - 1$ (d) $\delta_t = 0.01(1+2t)$ (e) $\delta_4 = 0.09$

2. $\ddot{a}_{\overline{10}|} = 8.10782, \quad 5|\ddot{a}_{\overline{10}|} = 6.35269, \quad 5|a_{\overline{10}|} = 6.05018$

   $\ddot{s}_{\overline{10}|} = 13.20678, \quad 1/a_{\overline{10}|} = 0.1295046$

3. Monthly payment is $263.34.

4. (a) The Endowment is $10,000.00.
   (b) The annual deposit is $302.43.

5. She still owes $2,219.73.

6. There will be a total of 17 payments with the last payment, on July 1, 2006, of $1,321.00.

7. (a) $i^{(2)} = 0.0611$ $i = 0.0621$.

8. (a)

Dur.	Pay	Interest	Principal	OLB
0	-	-	-	100,000,00
1	1200.17	1,000.00	200.17	99,799.83
2	1200.17	998.00	202.17	99,597.66
3	1200.17	995.98	204.19	99,393.47
4	1200.17	993.93	206.24	99,187.23

   (b)

Dur.	Int. on Loan	Dep. on SF	Int. on SF	Amount in SF	Net OLB
0	-	-	-	-	100,000.00
1	1,000.00	200.17	-	200.17	99,799.83
2	1,000.00	200.17	2.00	402.34	99,597.66
3	1,000.00	200.17	4.02	606.53	99,393.47

9. (a) The OLB after 10 years is \$53,953.69.
   (b) The Principal repaid in first payment of year 11 is \$660.63.
   (c) The total interest paid over the life of the loan is \$116,030.60.

10. (a) The new monthly payments are \$1053.22.
    (b) After 15 years the invested amount will accumulate to \$98,237.07.
    (c) The OLB after 10 years is \$73,409.98.
    (d) There will be \$24,827.09 left in the investment.

11. (a) The interest on the loan is \$115.00.
    (b) The deposit into the sinking fund is \$34.06.
    (c) At the end of eight years the SF balance is \$375.63.
    (d) The principal will be paid off in the 15th year.

12. (a) The monthly payment is \$828.36.
    (b) The OLB after 10 years is \$68,663.07.