

**MATH 3803 – Final Exam**  
**December 1996 – Answers**

1. (a)  $\delta_4 = 25/184$  (b)  $\delta_t = (6t + 4)/(3t^2 + 4t + 120)$   
(c)  $I_7 = 43$  (d)  $i = 0.1438$
  
2. (a) P.V. = \$743.22 (b) P.V. = \$420.81  
(c) P.V. = \$1,505.97 (d) P. V. + \$1,000.00
  
3. (a) A.V. = \$7,739.37 (b) A.V. = \$5,135.89  
(c) A.V. = \$5,436.56 (d) A.V. = \$5,735.94
  
4. (a) P.V. = \$12,486.62, A.V. = \$165,668.45  
(b) P.V. = \$11,056.55, A.V. = \$146,694.67
  
5. (a) (i)  $\ddot{s}_{\overline{20}|} = 63.00250$ , (ii)  $a_{\overline{30}|}^{(4)} = 9.77341$   
(iii)  $\overline{s}_{\overline{30}|} = 172.58809$ , (iv)  $a_{\overline{\infty}|}^{(2)} = 10.24404$   
(b) (i) P.V. = \$2,337.93, (ii) P.V. = \$2,343.74
  
6. (a) It will take 36.39 years.  
(b) Interest rate per month = 0.0188  
effective annual interest rate = 0.2501.
  
7. The amount of the extra payment is \$210.72
  
8. (a) The amount of interest in the 30th payment is \$3,052.39.  
(b) After the 12th payment the Sinking Fund contains \$41,469.20.