

HOMEWORK 6 - MATH 111

DUE DATE: Monday, March 14

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Solve the logarithmic equations

(a) $\log(x - 1) + \log(x + 2) = 1$

(b) $\log_4(x + 3) + \log_4(x - 3) = 1$

2. Find the domain of the function $f(x) = \log_3\left(\frac{x^2-9}{x+1}\right)$.

3. A bond with a face value of \$ 3,000 in 5 years can be purchased now for \$ 1,800. What is the simple interest rate?

4. You sign a \$ 6,000 note at the bank. The bank charges 10% discount rate. Find the net proceeds if the note that you signed is for 20 months. Also, find the actual interest rate you were charged by the bank.

5. Find the future amount in 5 years of a \$10,000 investment, if the interest rate is 4% compounded quarterly.

6. George Bush borrowed \$ 8,000 from his friend John Kerry to make home improvements in his ranch house. He repaid the loan 24 months later with simple interest at 5%. Kerry then invested the proceeds in a 5 year certificate of deposit paying 4% compounded quarterly. How much will Kerry have at the end of the 5 year period?¹

7. How much should your parents invest now to be able to pay for your little sister's \$40,000 tuition in 12 years, if the interest rate is kept constant at 6% compounded semi-annually?

8. Your uncle is planning to retire in 15 years. He has heard that you have taken George's[®] Math 111 and has come to you for help. He has set up an ordinary annuity with a payment amount of \$ 500 per month. If the interest rate is 6% per year, he would like you to figure out the amount of money that he will have accumulated until retirement.

¹The problem is fictitious. Any resemblance of names or characters with existing people is purely coincidental.