Math for Data and

Financial Literacy

Summer Assignment

The following packet contains topics and definitions that you will be required to know in order to succeed in Math for Data and Financial Literacy this year. You are advised to be familiar with each of the concepts and to complete the included problems by the beginning of the school year. All of these topics were discussed in Geometry or Algebra II and will

Find the distance

Find the midpoint of each segment with the indicated endpoints:

3) (−4, 3) and (7, 12)   4) (10, −3) and (−14, −9)

Simplify the following expressions.

5) $2a^2b^{-4} \cdot 4a^{-8}b^{6b}$ ^{2}

Special Products and Factorization   Techniques Quadratic Fo rmula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve the following equations:

8) Ü Ž í Ý ží Û= Ù

9) í Þ Ž+ ß Ž+ Ý= Ù

Special Products:

$T^2 í \underline{}^2 = (T í \,)(T+ \,)$

$T^3 í \underline{}^3 = (T í \,)(T^2 + = T+ \underline{}^2)$

$T^3 + \underline{}^3 = (T+ \,)(T^2 í = T+ \underline{}^2)$

Factor each of the following:

10) Ý Ž í ÚÝ Ý

11) á Ž í Û à

12) ß Ý Ž+ Ú Û ÞÝ Ÿ

13) ž Û í Ú Ü ž Ý Û

14) á Ž í Ú Ù ž Ü

15) Ý Ž+ á Ž í Þ ž Ú Ù

Binomial Theorem:

$$(T +)^2 = T^2 + 2 = T + {}^2$$

Functions

Evaluate each of the following for the function $f(x) = x^2 - 4x + 3$

33) $f(y) =$ 34) $f(y) =$ 35) $f(x + y) =$

Evaluate the following compositions of functions:

Let $f(x) = x^2 - 4$ and $g(x) = x^2 + 4$

36) $f(x) \cdot g(x)$ 37) $f(g(x))$ 38) $g(f(x))$

Inverse Functions

In order to calculate an inverse of a function algebraically, you must switch all of the x and y variables and solve the new equation for y. The inverse only exists if the resulting equation is a function.

Find the inverse (if it exists) of each of the following functions:

39) $f(x) = 5x - 2$ 40) $f(x) = x^3 - 4$ 41) $f(x) = \sqrt{x + 4}$

Logarithms

Natural Logarithmic Function: $\ln x > e^{y} = x$

Inverse Properties of Logarithms: $\ln x = x$ $e^{\ln x} = x$

Solve each of the following equations:

42) $4 + e^{2x} = 4y$ 43) $5 + x^{'} = 3$

Graph the following equations without a calculator:

44) $f(x) =$ ' "(ž í Û) + Ü

45) $f(x) =$ í Û+ ‹ž͡Ú

46) $f(x) =$

Properties of Logarithms

Product Property: $\log_b + \log_b = \log_b( )$

Quotient Property: $\log_b - \log_b = \log_b( )$

Power Property: $\log_b = ?? \log_b =$

Condense each of the following to a single logarithm:

47) Ý " ž+ ß' " Ÿí ' " 4

8) Ú[Ó Û '(' ž+ Ü)+ ' " ží ' "(ž Û Ú)]

Rewrite the expression as a sum, difference or multiple of logarithms:

49)   50)

CompoundInterest

Let P be the amount deposited, t the number of years, A the balance and r the annual interest rate (in decimal form).

Determine the balance A for P dollars invested at rate r for t years, compounded n times per year.

52) P=$2500, r=5%, t=40 years

51) P=$1000, r=3%, t=10 years

t	1	10	20	30	contin
P					

uous

t	1	10	20	30	continuous
P					