Foundations of Mathematics 30 (Grade 12)

Designed to help students achieve the Saskatchewan curricular outcomes for Foundations of Mathematics 30, this resource includes seven workbook units, score keys, tests, and test keys. No additional text is needed, but students will require a **TI-83** or **TI-84** calculator in order to complete this course.

Upon completion of each unit, the student should be able to:

Unit 1: Financial Mathematics: Credit, Loans, and Tax

- ❖ Calculate the monthly interest charges and service charges on an unpaid credit card.
- ❖ Identify and compare an instalment charge account and a thirty-day account.
- ❖ Calculate the monthly payments, total cost, and interest paid on a personal loan.
- ❖ Calculate mill rates, property taxes and discounts on taxes.

Unit 2: Financial Mathematics: Compound Interest and Annuities

- ❖ Understand the terminology used for compound interest and annuities.
- ❖ Calculate the future amount of a single deposit.
- ❖ Calculate the single present amount of a future amount.
- ❖ Calculate the interest rate required to produce a certain present or future amount.
- ❖ Use a program on a graphing calculator to determine a future amount, a present amount, or the interest rate.
- ❖ Calculate the future amount of an annuity.
- ❖ Calculate the equal payment amount to accumulate a certain future amount.
- ❖ Calculate the present amount of an annuity.
- ❖ Calculate the monthly payment required to pay off a loan.

Unit 3: Permutations and Combinations

- ❖ Apply the fundamental counting principle to determine the number of possibilities that exist in a given situation.
- ❖ Find the number of permutations of different objects.
- ❖ Find the number of permutations when only a portion of the set is taken.
- ❖ Find the number of permutations when objects are repeated.
- ❖ Understand the relationship between a permutation and the fundamental counting principle.
- ❖ Find the number of combinations of different objects from one set.
- ❖ Find the number of combinations of different objects from more than one set.
- ❖ Understand the difference between a permutation and a combination.

Unit 4: Probability

- ❖ Determine the probability that a single event will happen.
- ❖ Determine the probability that event A or event B will occur.
- ❖ Determine the probability that event A and event B will occur.
- ❖ Determine the probability that event A will occur given that event B has already occurred.

Unit 5: Polynomial Functions

- ❖ Divide polynomials.
- ❖ Find the remainder when a polynomial is divided by a binomial.
- ❖ Factor polynomials.
- ❖ Determine what quadrants the graphs of polynomial functions begin and finish in.
- ❖ Find the zeros of a polynomial function.
- ❖ Understand the meaning of the term zero of a polynomial function.
- ❖ Graph a polynomial function.

Unit 6: Exponential and Logarithmic Functions

- ❖ Understand what an exponential function is.
- ❖ Recognize the different types of exponential functions.
- ❖ Graph an exponential function.
- ❖ Shift the graph of an exponential function.
- ❖ Understand what a logarithm is.
- ❖ Evaluate logarithms.
- ❖ Change a logarithmic expression into an exponential expression and vice versa.
- ❖ Understand what a logarithmic function is.
- ❖ Recognize different types of logarithmic functions.
- ❖ Graph logarithmic functions.

Unit 7: Sinusoidal Functions

- ❖ Convert angle measurements from degrees to radians and vice versa.
- ❖ Graph the circular functions $y = \sin \theta$ and $y = \cos \theta$.
- ❖ Determine the domain and range of the above functions.
- ❖ Graph the functions $y = A\sin Bx$ and $y = A\cos Bx$.
- ❖ Graph the functions $y = A\sin B(x - C) + D$ and $y = A\cos B(x - C) + D$.
- ❖ Determine the period length, the amplitude, the vertical shift, and the phase shift of the above graphs.
- ❖ Interpret equations of sinusoidal functions that apply to real life situations.