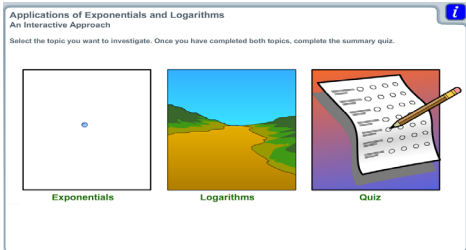
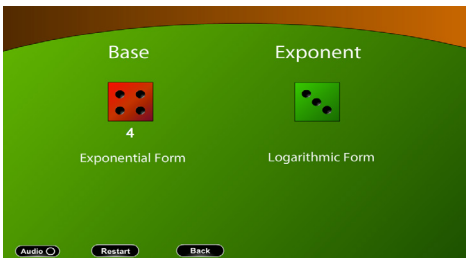
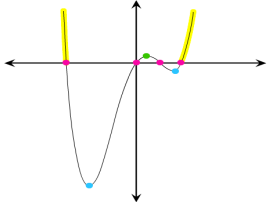


MHF4U

Ontario Educational Resources Bank (OERB) Activities

Exponential and Logarithmic Functions	
Activity	Description
<p>Applications of Exponential and Logarithmic Functions</p>  <p>Resource ID: ELO1090780</p>	<p>Build understanding of exponential and logarithmic functions by investigating real-world situations involving exponential growth or decay as well as situations involving logarithmic formulae. Practise applying this knowledge by completing a quiz.</p>
<p>Log Laws</p> <p>Recall: a logarithm is an alternative notation for expressing an exponent; it is the inverse of exponentiation. The logarithm of a number is the exponent to which a base must be raised to get the number.</p> <p>Example 1:</p> $\log_5 125 = 3$ <p>and</p> $5^3 = 125$ <p><input type="button" value="Next"/></p> <p>Resource ID: ELO1087840</p>	<p>Build understanding of the product, quotient and power laws for logarithms by investigating a variety of equations after reviewing the definition of a logarithm.</p>
<p>Log Rolling (Can be Dicey)</p>  <p>Resource ID: ELO1178270</p>	<p>Practise converting between logarithmic and exponential forms and evaluating logarithms by answering questions in a challenge activity.</p>
Polynomial and Rational Functions	
Activity	Description
<p>Characteristics of Polynomials</p> <p>Move the cursor over the coloured parts of the graph of this polynomial function to see their description. Click the coloured parts to learn more.</p>  <p>Resource ID: ELO1090650</p>	<p>Build understanding of polynomial functions by reviewing the key characteristics of polynomial functions through interactive descriptions.</p>

Polynomial and Rational Functions (continued)

Activity

Description

Complex Rational Functions Curve Sketching

Complex Rational Functions
Curve Sketching

Characteristics

From Characteristics to Graphs

Practice

$$f(x) = \frac{h(x)}{g(x)}, g(x) \neq 0$$

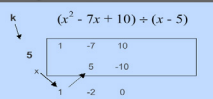


Resource ID: ELO1090760

Build understanding of complex rational functions by viewing a tutorial analysis of the critical characteristics of their equations leading to sketches of their graphs. Practise applying this knowledge by completing analyses of several rational functions and matching each equation to an appropriate graph.

Division of Polynomials

Synthetic Division



Quotient: $1x - 2 R0$
(though we usually do not put in the 1)



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Sample Problems

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Steps:

- Note: Arrange dividend in descending degree first.
Step 1: Solve degree > 0 terms to make me set call k . Write the k value to the left of box.
Step 2: Write numerical coefficients of the dividend vertically inside the box. Use a zero coefficient for any missing degrees of the variable.
Step 3: Drop the first coefficient of dividend to just below box.
Step 4: Multiply k value by dropped down first coefficient. Write result in box under next coefficient.
Step 5: Add and put result under box beneath sum figure.
Step 6: Multiply new value under box by k . Put the result in the box beneath next coefficient. Add and stop result beneath box already below next figure.
Step 7: Continue until you have used all the coefficients.
Step 8: Interpret the result.
Numbers below the box are coefficients of variables, beginning with one degree LESS than the dividend.

Resource ID: ELO1093610

Practise long division and synthetic division of a polynomial by a binomial by following the illustrated step-by-step procedures provided.

Finite Differences

Finite Differences - Application

Example 2

Given the following data set:

x	$f(x)$	First Level Difference $\Delta_1 f(x)$	Second Level Difference $\Delta_2^2 f(x)$	Third Level Difference $\Delta_3^3 f(x)$
1	12			
2	-10	-22		
3	-18	-8	14	
4	0	18	26	12
5	66	66	30	12
6	162	106	50	12

3. Are these differences constant? If not, as in this case, find the next difference level.

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Resource ID: ELO1098290

Build understanding of finite differences by investigating the finite differences for linear, quadratic, cubic and quartic functions and how they can predict the leading coefficient of the function. Practise applying this knowledge by determining the finite differences, identifying the type of polynomial and the value of the leading coefficient from given tables of values.

Polynomial Concentration

Resource ID: ELO1178280

Build understanding of characteristics of polynomial functions by matching different representations of a variety of polynomial functions.

