

# Polynomial and Rational Functions Lesson Objectives

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## Polynomial Functions Lesson

Identify a polynomial function, its degree, and leading coefficient

Determine the end behavior of a function and the number of turning points of its graph

Find the local and global extreme values of a polynomial function

## Real Zeroes of a Polynomial Function Lesson

Determine the behavior at the x-intercepts of a polynomial function

Find all rational numbers that are possible zeroes of a polynomial function

Use the Intermediate Value Theorem to determine if a function has a zero over a closed interval

## Dividing Polynomials Lesson

Use the Remainder Theorem to find the remainder in a division problem

Use the Rational Zero Theorem and synthetic division to find the zeroes of a polynomial function

Use the Factor Theorem to determine the linear factors of a polynomial

## Complex Zeroes of a Polynomial Function Lesson

Use synthetic division to solve for all zeroes of a polynomial function where two solutions are complex

## Graphs of Rational Functions Lesson

Identify the domain of a rational function and the vertical asymptotes of its graph

Identify the horizontal asymptotes of the graph of a rational function

Identify the slant asymptotes of the graph of a rational function

## Operations with Rational Expressions Lesson

Add, subtract, multiply, and divide rational expressions

Prove that the set of rational expressions is closed under addition, subtraction, multiplication, and division by nonzero values