Section 2.2 Polynomial Functions of Higher Degree

Objective: In this lesson you learned how to sketch and analyze graphs
of polynomial functions.

Course Number

Instructor

Date

Important Vocabulary   Define each term or concept.

Continuous

Extrema

Relative minimum

Relative maximum

Repeated zero

Multiplicity

Intermediate Value Theorem

I. Graphs of Polynomial Functions (Pages 103−104)

Name two basic features of the graphs of polynomial functions.

1)
2)

Will the graph of $g(x) = x^7$ look more like the graph of
$f(x) = x^2$ or the graph of $f(x) = x^3$? Explain.

What you should learn
How to use
transformations to sketch
graphs of polynomial
functions

II. The Leading Coefficient Test (Pages 105−106)

State the **Leading Coefficient Test.**

1.
     a.
     b.
2.
     a.
     b.

What you should learn
How to use the Leading
Coefficient Test to
determine the end
behavior of graphs of
polynomial functions

Example 1:   Describe the left and right behavior of the graph of
$f(x) = 1 - 3x^2 - 4x^6$.

III. Zeros of Polynomial Functions (Pages 106–110)

Let f be a polynomial function of degree n. The function f has at

most _____ real zeros. The graph of f has at most

_____ relative extrema.

Let f be a polynomial function and let a be a real number. List
four equivalent statements about the real zeros of f.
1)

2)

3)

4)

If a polynomial function f has a repeated zero $x = 3$ with

multiplicity 4, the graph of f _____ the x-axis at

$x =$ _____. If f has a repeated zero $x = 4$ with multiplicity 3, the

graph of f _____ the x-axis at $x =$ _____.
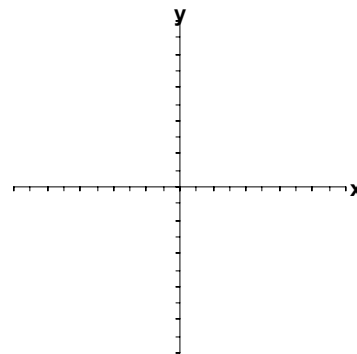
Example 2:   Sketch the graph of $f(x) = \frac{1}{4}x^4 - 2x^2 + 3$.

IV. The Intermediate Value Theorem (Pages 111)

Interpret the meaning of the Intermediate Value Theorem.

Describe how the Intermediate Value Theorem can help in
locating the real zeros of a polynomial function f.

Homework Assignment

Page(s)

Exercises