Course Number

Instructor

Date

Section 2.2 Polynomial Functions of Higher Degree

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

Important Vocabulary Define each term or concept.

Continuous

Repeated zero

Multiplicity

Intermediate Value Theorem

I. Graphs of Polynomial Functions (Pages 139–140)

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

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.

II. The Leading Coefficient Test (Pages 141–142)

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

State the **Leading Coefficient Test.**

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

III. Zeros of Polynomial Functions (Pages 142–145)

What you should learn
How to find and use zeros of polynomial functions as sketching aids

On the graph of a polynomial function, turning points are . . .

Let f be a polynomial function of degree n. The graph of f has, at most, _____ turning points. The function f has, at most, _____ real zeros.

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

1)

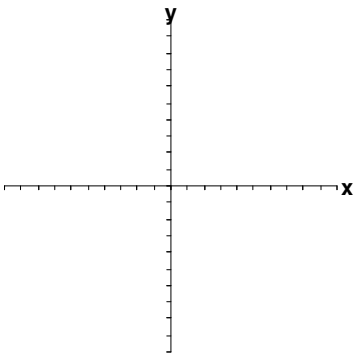
2)

3)

4)

If a polynomial function f has a repeated zero $x = 3$ with multiplicity 4, the graph of f _____ the x-axis at $x = 3$.

If a polynomial function f has a repeated zero $x = 4$ with multiplicity 3, the graph of f _____ the x-axis at $x = 4$.



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

IV. The Intermediate Value Theorem (Pages 146–147)

What you should learn
How to use the Intermediate Value Theorem to help locate zeros of polynomial functions

Explain what the Intermediate Value Theorem implies about a polynomial function f.

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

Homework Assignment

Page(s)

Exercises