Precalculus for Team-Based Inquiry Learning

2024 Development Edition

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TBIL Fellows

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Website: Precalculus for Team-Based Inquiry Learning[1]

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Chapter 1

Polynomial and Rational Functions (PR)

Objectives

BIG IDEA for the chapter goes here, in outcomes/main.ptx
By the end of this chapter, you should be able to...

1. Graph quadratic functions and identify their axis of symmetry, and maximum or minimum point.
2. Use quadratic models to solve an application problem and establish conclusions.
3. Rewrite a rational function as a polynomial plus a proper rational function.
4. Determine the zeros of a real polynomial function, write a polynomial function given information about its zeros and their multiplicities, and apply the Factor Theorem and the Fundamental Theorem of Algebra.
5. Find the intercepts, estimated locations of maxima and minima, and end behavior of a polynomial function, and use this information to sketch the graph.
6. Find the domain and range, vertical and horizontal asymptotes, and intercepts of a rational function and use this information to sketch the graph.

Readiness Assurance. Before beginning this chapter, you should be able to...

a Readiness Outcome 1

- Review:
- Practice:

b Readiness Outcome 2

- Review:
- Practice:

1.1 Graphing Quadratic Functions (PR1)

Objectives

- Graph quadratic functions and identify their axis of symmetry, and maximum or minimum point.

1.1.1 Activities

Activities go here! Don't forget to put text in <p> tags or it won't show up.

Activity 1.1.1 Activities may start with an <introduction>.

(a) Then we can ask students to do some <task>s.

(b) Here's a second <task>.

1.1.2 Videos

It would be great to include videos down here, like in the Calculus book!

1.2 Quadratic Models and Meanings (PR2)

Objectives

- Use quadratic models to solve an application problem and establish conclusions.

1.2.1 Activities

Activities go here! Don't forget to put text in <p> tags or it won't show up.

Activity 1.2.1 Activities may start with an <introduction>.

(a) Then we can ask students to do some <task>s.

(b) Here's a second <task>.

1.2.2 Videos

It would be great to include videos down here, like in the Calculus book!

1.3 Polynomial Long Division (PR3)

Objectives

- Rewrite a rational function as a polynomial plus a proper rational function.

1.3.1 Activities

Activities go here! Don't forget to put text in <p> tags or it won't show up.

Activity 1.3.1 Activities may start with an <introduction>.

(a) Then we can ask students to do some <task>s.

(b) Here's a second <task>.

1.3.2 Videos

It would be great to include videos down here, like in the Calculus book!

1.4 Zeroes of Polynomial Functions (PR4)

Objectives

- Determine the zeros of a real polynomial function, write a polynomial function given information about its zeros and their multiplicities, and apply the Factor Theorem and the Fundamental Theorem of Algebra.

1.4.1 Activities

Activities go here! Don't forget to put text in <p> tags or it won't show up.

Activity 1.4.1 Activities may start with an <introduction>.

(a) Then we can ask students to do some <task>s.

(b) Here's a second <task>.

1.4.2 Videos

It would be great to include videos down here, like in the Calculus book!

1.5 Graphs of Polynomial Functions (PR5)

Objectives

- Find the intercepts, estimated locations of maxima and minima, and end behavior of a polynomial function, and use this information to sketch the graph.

1.5.1 Activities

Activities go here! Don't forget to put text in <p> tags or it won't show up.

Activity 1.5.1 Activities may start with an <introduction>.

(a) Then we can ask students to do some <task>s.

(b) Here's a second <task>.

1.5.2 Videos

It would be great to include videos down here, like in the Calculus book!

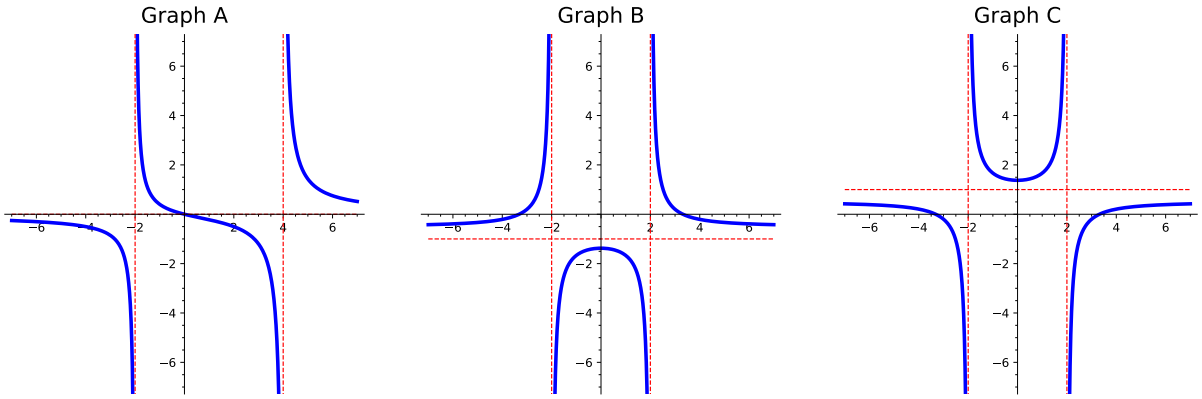
1.6 Properties of Graphs of Rational Functions (PR6)

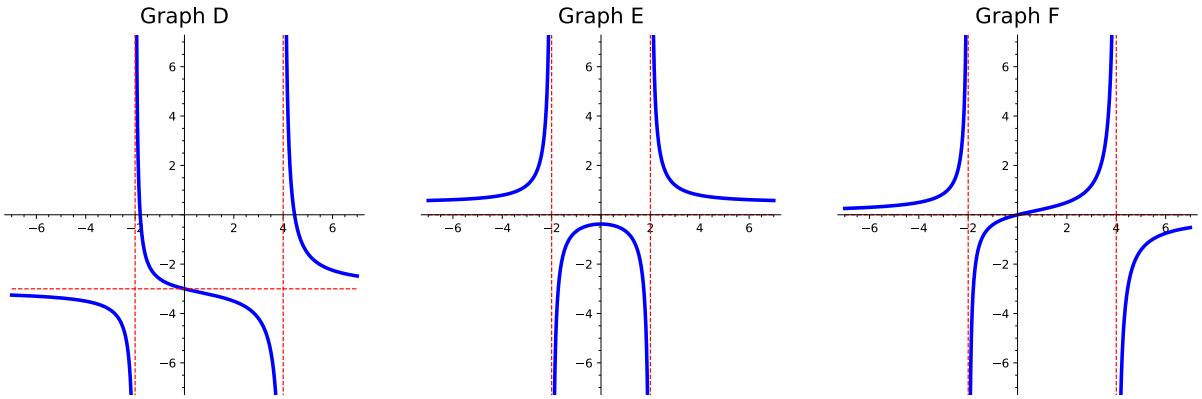
Objectives

- Find the domain and range, vertical and horizontal asymptotes, and intercepts of a rational function and use this information to sketch the graph.

1.6.1 Activities

Activity 1.6.1 Consider the following six graphs of rational functions:





(a) Which of the graphs above represents the function $f(x) = \frac{2x}{x^2-2x-8}$?

(b) Which of the graphs above represents the function $g(x) = \frac{x^2+3}{2x^2-8}$?

1.6.2 Videos

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Colophon

This book was authored in PreTeXt.