

4.7 Exploration: Exploring the Behaviour of Functions Near the Asymptotes

Specific Expectations

The following expectation is common to both the Functions and Relations and Functions courses.

- OC2.03 determine, through investigation, the properties of the functions defined by $f(x) = \sqrt{x}$ [e.g., domain, range, relationship to $f(x) = x^2$] and $f(x) = \frac{1}{x}$ [e.g., domain, range, relationship to $f(x) = x$]

Text Page 349

Time Required Functions and Relations or Functions: 30 min

Materials and Equipment

- graphing calculator

Overview

- Students use tables to examine the values of a function near the asymptotes.

Behaviour of Functions Near the Asymptotes

Graphing technology allows students to focus on the asymptotes. This understanding will lead to curve sketching in grade 12 calculus.

Management Options

Groups – Pairs can work through the steps in this section. Provide time for a whole-class discussion.

Teacher Demonstration – If possible, each student should have a graphing calculator for working through this section. Choose a different

function, for example, $f(x) = \frac{3}{x+2}$, and

lead students through the steps. Remind students to insert brackets around the entire denominator. Students could work through a second example on their own.

If students want to see both the graph and table on the graphing calculator's screen at the same time, they can press **MODE** and then select **G-T** on the last line of the menu.

Questions with a Functions and Relations Focus:

7

Questions with a Functions Focus:

7