
Connections

The Chapter Problem

This *Chapter Problem* leads students through making a decision. Students are given data* about the costs and demand for T-shirts which will be sold to raise funds for a food bank.

Students can perform a linear regression on the demand data to obtain a demand function. From this function, they can obtain a revenue function, which they should describe in terms of domain and the shape of the graph. Students should write a cost function for each supplier and then obtain the corresponding profit function. They must examine the profit-function graphs, noting the domain, determining the break-even points, and deciding which supplier they would recommend.

By further analyzing the profit functions, students can determine if it is possible to raise the target amount of \$7000 through T-shirt sales.

This problem can be used on an ongoing basis as the chapter develops. Alternatively, the problem could be solved as an assignment after the entire unit has been taught. A blackline master listing all of the questions is provided at the end of the chapter. In addition, the answers/solutions to these questions are also provided.

* Students could research data for their own school and obtain prices from local suppliers as an alternative to using the data provided in the text.

Challenge 1

This is a pre-calculus challenge which provides an opportunity for students in either the Functions and Relations or Functions courses to combine exploration, using graphing technology, with their own knowledge of functions and the corresponding graphs to more clearly understand asymptotes. Assign this challenge when students have studied section 4.6. Students will be able to use reciprocal functions for finding a function with vertical asymptotes, (a). They will then need to refer back to Chapter 3 about inverse functions before finding a function with horizontal asymptotes, (b). Finally, they will need to do some research to learn about oblique asymptotes for (c).

Challenge 2

This is another pre-calculus problem, which requires students to integrate their knowledge of measurement and geometry from Grade 9 with their knowledge about algebra and functions from grades 10 and 11 to create an algebraic model for this minimum problem.

Web Challenge

You will find support for this Internet activity at the teachers' Web site: www.math.nelson.com.

All three Challenges can be used as rich learning tasks or for formative / summative assessment purposes. Refer to the front matter of this *Teacher Resource* for more detailed instructions.