

Foundations of Mathematics 12

Polynomial Functions

Introduction:

A graph is a common form of showing how data being collected can be related. Most data that is collected never form straight lines, so a different method of displaying this data in equation form is needed. Understanding how polynomial equations look as graphs, and the functions that provide these graphs will help you understand how to predict trends and patterns that can be very useful when it comes to investing. This guide will introduce you to the different concepts around polynomial functions and their graphs.

Note Taking:

Note taking is an important skill in any math course. When taking notes you want to focus on important terms, normally in **Bold** or in the margin of this textbook, formulas which are treated the same way, at least one of the examples shown with the your turn section completed, and the In Summary box at the end of the sections. Notes are made for your benefit not mine, so make sure you can understand what you have written. You will be able to use these notes if you choose to do an interview.

Resources Needed:

Foundations of Mathematics 12 text or Internet text access

Key Terms:

Scatter plot, polynomial functions, end behaviour, cubic functions, turning points, standard form, leading coefficient, line of best fit, regression function, interpolation, extrapolation, curve of best fit

Expectations:

- 1) Using both graphs and equations, explain how a **polynomial function** is different from a variety of other function types. (show at least 3 other function types)
 - Complete the Explore the Math activities on pages 380-381
 - Read and take notes on pages 380→382
 - Complete **only** the Further Your Understanding problems on page 383
- 2) Including diagrams of **even degree** and **odd degree** polynomials, create a visual presentation that can be used to show the relationship between a **polynomial function** in **standard form** and the graph. (include: **intercepts, end behaviour, domain, range, turning points**)
 - Complete the Investigate the Math activities on pages 384-385
 - Read and take notes on pages 384→392
 - Complete **only** the Check Your Understanding problems on page 393

- 3) Demonstrate using a graph of some data points how a **line of best fit** can be used to show a relationship between two concepts. (example: distance-time, force-spring extension, ...)
 - Complete the Investigate the Math activities on pages 401-402
 - Read and take notes on pages 401→407
 - Complete **only** Check Your Understanding problems on page 407

- 4) Explain why and how financial analysts use a **curve of best fit** to outline the performance of a stock during the course of a year.
 - Complete the Investigate the Math activities on pages 413-414
 - Read and take notes on pages 413→418
 - Complete the Further/Check Your Understanding problems on page 419

- 5) Solve the Practising problems listed below: (you need to choose the questions that will best demonstrate your understanding of the expectations. The questions listed below are only a suggestion)
 - #4, 5, 6, 7, 10, 11, 12, 13, 15, and 17 on pages 393→397
 - #4, 5, 6, 7, 9, 10, and 11 on pages 408→411
 - #3, 4, 6, 7, 9, 10, and 11 on pages 420→422

Evaluation:

At the end of each learning guide, you have an option of how you would like to be evaluated. The only exception is the Unit Tests which are mandatory. You can choose to demonstrate your knowledge of the expectations with an interview, PowerPoint presentation, poster, video, brochure, ... etc. The other option is a quiz. It is up to you how the evaluation will take place and be warned some methods take more time than others.