# The PowerPC Numerics Environment

This part is a general description of PowerPC Numerics. Chapter 1 describes the standards for floating-point arithmetic that PowerPC Numerics implements (IEEE Standard 754 and the FPCE technical report) and discusses why these standards are important. If you are unfamiliar with how computers perform floating-point arithmetic, you should read Chapter 1. Chapters 2 through 6 describe how PowerPC Numerics implements the standards. They describe the basic features shared by all PowerPC Numerics implementations, including

■ the numeric data formats

■ the special values NaN (Not-a-Number) and Infinity

■ the methods by which floating-point expressions are evaluated

■ environmental controls, such as setting the rounding direction and handling exceptions

■ conversions between the different numeric formats

■ operations supported by PowerPC Numerics

Although Part 1 uses the C programming language in its examples, many of the facilities of PowerPC Numerics are accessible to users of virtually any high-level programming language, as well as to assembly-language programmers.