Chapter 2 Figures From

MATHEMATICAL METHODS for Scientists and Engineers

Donald A. McQuarrie

For the Novice Acrobat User or the Forgetful

When you opened this file you should have seen a slightly modified cover of the book *Mathematical Methods for Scientists and Engineers* by Donald A. McQuarrie, a menu bar at the top, some index markers at the left hand margin, and a scroll bar at the right margin.

Select the **View** menu item in the top menu and be sure **Fit in Window** and **Single Page** are selected. Select the **Window** menu item and be sure **Bookmarks** and **Thumbnails** ARE NOT selected.

You can and probably should make the top menu bar disappear by pressing the function key F9. Pressing this key (F9) again just toggles the menu bar back on. You may see another tool bar that is controlled by function key F8. Press function key F8 until the tool bar disappears.

In the upper right hand corner margin of the window containing this text you should see a few small boxes. DO NOT move your mouse to the box on the extreme right and click in it; your window will disappear! Move your mouse to the second box from the right and click (or left click); the window containing this text should enlarge to fill the screen. Clicking again in this box will shrink the window; clicking again will return the display to full screen.

The prefered means of navigation to any desired figure is controlled by the scroll bar in the column at the extreme right of the screen image. Move your mouse over the scroll bar slider, click, and hold the mouse button down. A small window will appear with the text "README (2 of 19)". Continuing to hold down the mouse button and dragging the button down will change the text in the small window to something like "2.4 (6 of 19)". Releasing the mouse button at this point moves you to Figure 2.4 of Chapter 2. The (6 of 19) indicates that Figure 2.4 resides on page 6 of the 19 pages of this document.

ANIMATIONS

Figure 2.9 has an associated animated figure that requires Quicktime™ for display. This animation, named Anim2_9.mov, must be independently downloaded from the server.

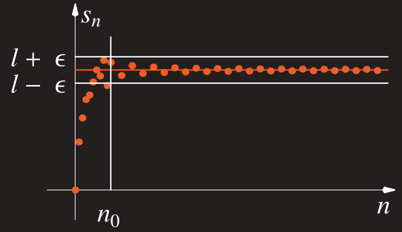


Figure 2.1

An illustration of the convergence of a sequence.

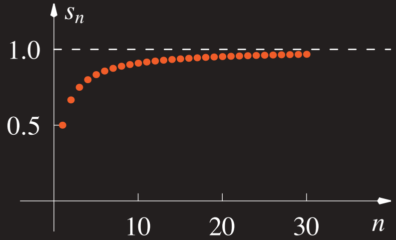


Figure 2.2
A plot of $n/(1+n)$ against n for $n \geq 1$. The limiting value is shown as a dashed line.

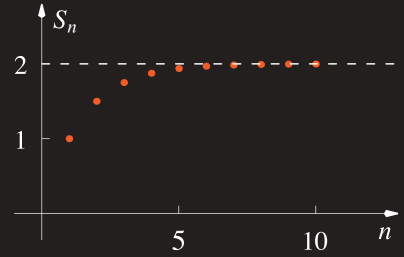
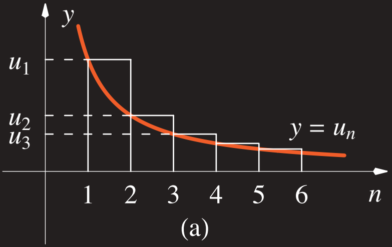


Figure 2.3
A plot of $2[1 - (1/2)^n]$, the partial sums for the geometric series for $r = 1/2$, against n.The limiting value is shown as a dashed line.



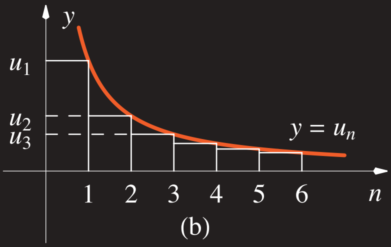


Figure 2.4
A geometric aid to the proof of the integral test.

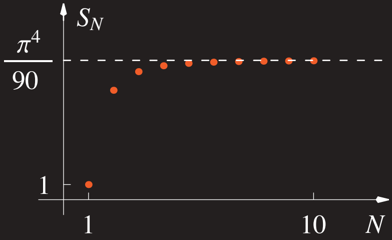


Figure 2.5
The partial sums $S_N = \sum_{n=1}^{N} \frac{1}{n^4}$ plotted against N. The limiting value is shown as a dashed line.

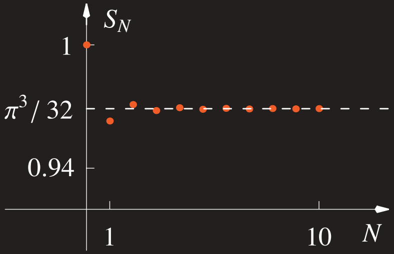


Figure 2.6

The partial sums $S_N = \sum_{k=0}^{N} \frac{(-1)^k}{(2k+1)^3}$ plotted against N. The limiting value is shown as a dashed line. Note the scale on the vertical axis.

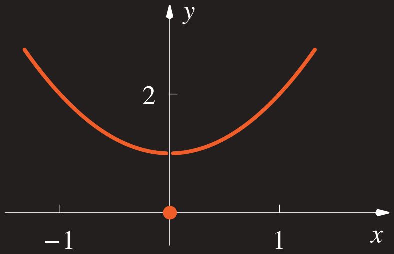


Figure 2.7

A plot of the function $y = S(x)$ defined by Equation 3.

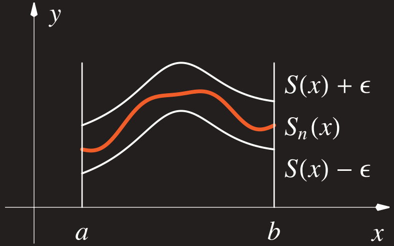


Figure 2.8

An illustration of uniform convergence.

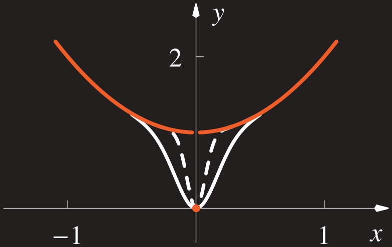


Figure 2.9

The partial sums of Equation 3 for $n = 20$, and 100 plotted against x.

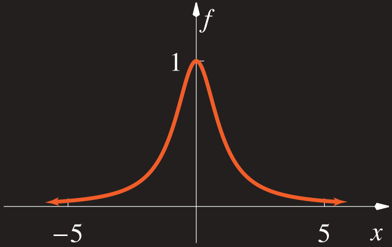


Figure 2.10

The function $f(x) = 1/(1 + x^2)$ plotted against x.

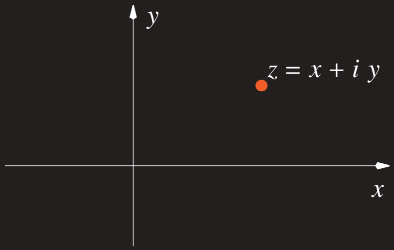


Figure 2.11

A point $z = x + i\,y$ in the complex plane.

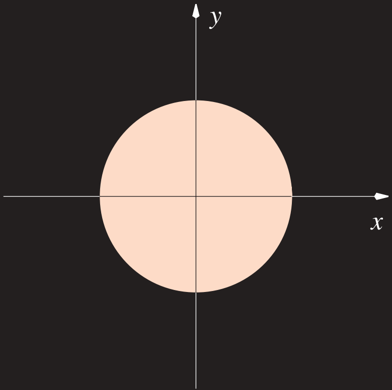


Figure 2.12

The region $|z| < 1$ in the complex plane.

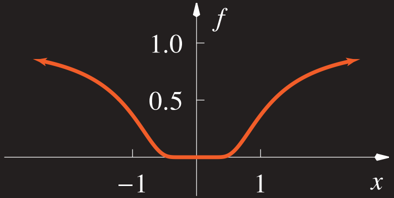


Figure 2.13

The function $f(x) = e^{-1/x^2}$ plotted against x.

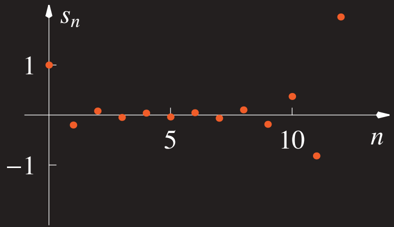


Figure 2.14

The successive terms of the asymptotic series of $x\, e^x E_1(x)$ given by Equation 12 for $x = 5$ plotted against n.

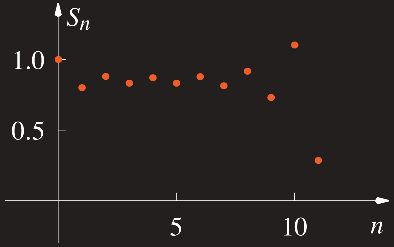


Figure 2.15

The successive partial sums of the asymptotic series of $xe^x E_1(x)$ given by Equation 12 for $x = 5$ plotted against n.

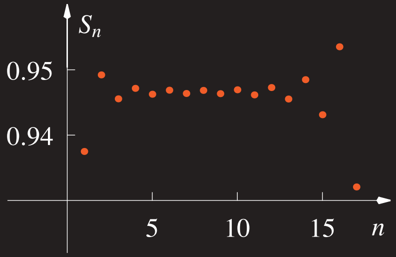


Figure 2.16

The successive partial sums of the asymptotic series of $2x\,e^{x^2}I(x)$ given by Equation 14 for $x = \sqrt{8}$ plotted against n. Note the scale on the vertical axis.