Exercise 1.10(a): change $4t^2 - x^2$ to $4t^2 + x^2$.

Example 5.4: change rest of sentence after displayed formula to used earlier in Example 4.1, along with homogeneous Dirichlet boundary conditions: $u(t, 0) = u(t, 1) = 0$.

Equation (5.28): change $O((\Delta t)^2)$ to $O(\Delta t)$:

$$\frac{\partial u}{\partial t}(t_j, x_m) \approx \frac{u(t_j, x_m) - u(t_{j-1}, x_m)}{\Delta t} + O(\Delta t).$$  \hfill (5.28)

Change sentence after equation (5.40):
We use step sizes $\Delta t = \Delta x = .005$, set $\ell = 1$, and try four different values of the wave speed.

Equation (5.45): change denominator to $2 \Delta x$:

$$\frac{\partial u}{\partial x}(t_j, x_m) \approx \frac{u_{j,m+1} - u_{j,m-1}}{2 \Delta x} + O((\Delta x)^2).$$  \hfill (5.45)

Correct last displayed equation by switching indices on the $u_{i,j}$:

$$u_{1,1} = .1831, \quad u_{2,1} = .2589, \quad u_{3,1} = .1831, \quad u_{1,2} = .3643, \quad u_{2,2} = .5152, \quad u_{3,2} = .3643, \quad u_{1,3} = .5409, \quad u_{2,3} = .7649, \quad u_{3,3} = .5409, \quad u_{1,3} = .5409,$$
Equation (5.78): the sub- and super-diagonal matrix elements should be $-1$, not $-\rho^2$:

$$B_{\rho} = \begin{pmatrix} 2(1 + \rho^2) & -1 & -1 & -1 & -1 & -1 & \cdots & -1 \\ -1 & 2(1 + \rho^2) & 2(1 + \rho^2) & -1 & -1 & -1 & \cdots & -1 \\ -1 & -1 & 2(1 + \rho^2) & -1 & -1 & -1 & \cdots & -1 \\ & & & \ddots & \ddots & \ddots & \ddots & \ddots \\ -1 & -1 & -1 & & & & & \\ -1 & -1 & -1 & & & & & \\ -1 & -1 & -1 & & & & & \\ -1 & -1 & -1 & & & & & \\ -1 & -1 & -1 & & & & & \\ \end{pmatrix}$$ 

(5.78)

Equation (5.82): replace $w((n-1))$ by $U_{n-1}w^{(n-1)}$ and $U_j$ by $U_k$:

$$z^{(1)} = \tilde{f}^{(1)}, \quad z^{(j+1)} = \tilde{f}^{(j+1)} - L_j z^{(j)}, \quad j = 1, 2, \ldots, n-2,$$

$$U_{n-1}w^{(n-1)} = z^{(n-1)}, \quad U_k w^{(k)} = z^{(k)} - \rho^2 w^{(k+1)}, \quad k = n-2, n-3, \ldots, 1.$$ 

(5.82)

Equation (5.83): replace $L_j$ by $L_k$:

$$w^{(k)} = L_k (w^{(k+1)} - \rho^{-2} z^{(k)}), \quad k = n-2, n-3, \ldots, 1.$$ 

(5.83)

Equation (6.40): delete initial fraction:

$$\frac{1}{2\pi} \int_{-\pi}^{\pi} s_n(x) \, dx = \frac{1}{2\pi} \int_{-\pi}^{\pi} \frac{\sin (n + \frac{1}{2}) x}{\sin \frac{1}{2} x} \, dx = \frac{1}{2\pi} \int_{-\pi}^{\pi} \sum_{k=-n}^{n} e^{i k x} \, dx = 1,$$ 

(6.40)

Displayed formula after Theorem 6.17: change $\mathbb{R}^2$ to $\Omega$:

$$u(x, y) = -\int_{\Omega} G_0(x, y; \xi, \eta) \Delta u(\xi, \eta) \, d\xi \, d\eta.$$ 

Equation (6.108): change $\mathbb{R}^2$ to $\Omega$ twice:

$$\int_{\Omega} \delta(x - \xi) \delta(y - \eta) u(\xi, \eta) \, d\xi \, d\eta = \int_{\Omega} -\Delta G_0(x, y; \xi, \eta) u(\xi, \eta) \, d\xi \, d\eta.$$ 

(6.108)
Equation (6.135): correct left hand side:

\[
\frac{\partial G}{\partial \rho} (r, \theta; 1, \phi) = -\frac{1}{2\pi} \frac{1-r^2}{1+r^2 - 2r \cos(\theta - \phi)},
\] (6.135)

Exercise 10.3.16: Change \( n = 2 \) in part (b) to \( n = 3 \), and change \( n = 3 \) in part (c) to \( n = 4 \).

Case (iii): Change \( r_2 = r_1 + k \) to \( r_1 = r_2 + k \); change “smaller” to “larger”, and change \( x^{r_2} \) to \( (x-x_0)^{r_2} \) in equation (11.93):

(iii) Finally, if \( r_1 = r_2 + k \), where \( k > 0 \) is a positive integer, then there is a nonzero solution \( \tilde{u}(x) \) with a convergent Frobenius expansion corresponding to the larger index \( r_1 \). One can construct a second independent solution of the form

\[
\tilde{u}(x) = c \log(x-x_0) u^{(\infty)}(x) + v(x), \quad \text{where} \quad v(x) = (x-x_0)^{r_2} + \sum_{n=1}^{\infty} v_n(x-x_0)^{n+r_2}
\] (11.93)

is a convergent Frobenius series, and \( c \) is a constant, which may be 0, in which case the second solution \( \tilde{u}(x) \) is also of Frobenius form.

In equation (12.145) and the displayed equation immediately after, the limit should be as \( t \to 0 \):

\[
\lim_{t \to 0} M_{ct} [f] = M_0 [f] = f(0).
\] (12.145)

\[
\lim_{t \to 0} \langle u(t, \cdot); f \rangle = \langle u(0, \cdot); f \rangle = 0 \quad \text{for all functions } f,
\]

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