

Corrections to "Partial Differential Equations and Boundary-Value Problems with Applications" by M. Pinsky, August 2001

- page 4, exercise 2: $u(x, y) = e^{kx} e^{k^2 y}$
 page 5, line 2: Newton's law of....
 page 5, line 22: $u(x_i; t)$
 page 7, line 21: sometimes
 page 9, exercise 1: $u(0; t) = T_1, u_x(L; t) = 0$
 page 9, exercise 2: $u_x(L; t) = \Phi$
 page 9, exercise 3: $(T_1 - u(L; t))$
 page 10, line 6: $x^2 + y^2 < R^2$
 page 10, line 13: $t > 0, 0 < x < L$
 page 11, line 11: $\frac{Y''(y)}{Y(y)} = -\lambda$
 page 12, line 17: $A_4 \sin ky$
 page 15, line 3: $\frac{d}{dx}(e^{\alpha x})$
 page 17, line 20: $y^2 Y'' + y Y' = 0$
 page 17, line 23: $y^2 Y'' + y Y' + l^2 Y = 0$
 page 18, line 5-: $u(0, y) = A_1(A_3 \dots)$
 page 18, line 4-: that $A_1 = 0$;
 page 18, line 1-: Writing $A = A_2 A_3$,
 page 25, line 9-: $= \sum_{i=1}^N \|\varphi_i\|^2 (c_i - \dots)$
 page 29, line 8: interchange $\cos x$ and $\sin x$
 page 32, line 7-: have $\langle \varphi, a\psi \rangle = \bar{a} \langle \varphi, \psi \rangle$
 page 33, exercise 3: Let $\bar{f} =$
 page 33, exercise 8: $g(x) = b_1 \varphi_1(x) + b_2 \varphi_2(x) + \dots$
 page 34, exercise 15: $R^2 = \|\varphi\|^2 \|\psi\|^2 - \langle \varphi, \psi \rangle^2 \geq 0$
 page 43, line 17: $f(-x) \quad -L < x < 0$ (delete minus sign before f)
 page 45, exercise 10: $-\pi < x < \pi$
 page 46, line 1-: $x' = \pi x/L$
 page 49, line 6: where $x \in (a, b)$
 page 50, lines 2,4,6: $\int_{x_i}^{x_{i+1}}$ (in five places)
 page 51, line 5: $\cos a \sin b$
 page 53, line 9: insert $\lim_{N \rightarrow \infty}$ before last integral
 page 56, line 2: $f(u) = \dots$
 page 56, exercise 14(e): $(N - \frac{1}{2})\pi \leq X \leq \dots$
 page 58, line 7-: $\cos 5x + \dots + \cos(2n - 1)x$
 page 59, line 1-: $\Delta x_k = \dots$
 page 60, line 2: $\frac{\sin 3\pi/2n}{3}$
 page 65, line 17: $A'_0 = \frac{1}{2L} \int_{-L}^L f'(x) dx = f(L - 0) = f(-L + 0)$
 page 65, line 18: $A'_n = \frac{1}{2L} \int_{-L}^L f'(x) \cos(n\pi x/L) dx = \frac{n\pi}{L} \int_{-L}^L f'(x) \sin(n\pi x/L) dx = \frac{n\pi}{L} B_n$
 page 65, line 19: $B'_n = \frac{1}{2L} \int_{-L}^L f'(x) \sin(n\pi x/L) dx = -\frac{n\pi}{L} \int_{-L}^L f'(x) \cos(n\pi x/L) dx = -\frac{n\pi}{L} A_n$
 page 65, line 20: $f(x), -L < x < L$
 page 66, line 10-: $F(-\pi) = F(\pi)$
 page 67, line 3: $= \frac{1}{n\pi} \int_{-\pi}^{\pi}$
 page 75, line 2: $= \pi \sum_{n=1}^{\infty} n^2 (a_n^2 + \dots)$
 page 76, exercise 11: $-\varphi(N) \leq \sum_{n=N+1}^{\infty} \dots$
 page 76, exercise 12(a): $\frac{-1}{N^s}$
 page 78, line 11: We begin with Euler's formula....
 page 79, line 8: may be proved using Euler's formula
 page 79, line 6-: $\dots + i(ae^{ax} \sin bx + \dots)$
 page 81, line 2: we apply Euler's formula...

page 81, line 8: Applying Euler's formula...

page 83, exercise 5: $\frac{r \sin x}{1+r^2-2r \cos x} = \sum_{n=1}^{\infty} r^n \sin nx$

page 83, exercise 7: $\lim_{M,N \rightarrow \infty} \sum_{n=-M}^N \alpha_n e^{in\pi x/L}$ Try example 1.1.4 at $x = 0$

page 85, line 20: $0 = A \cos(L\sqrt{\lambda})$ (insert parentheses)

page 87, line 18: $= A(1 + hL)$ which requires....(delete L)

page 87, lines 21-22: $= h(Ae^{\mu L} + Be^{-\mu L})$ (delete μ twice)

page 87, line 25: $B\sqrt{\lambda}$ (delete parentheses)

page 90, line 2-: at the end of the line, need $B\mu \sinh \mu a = 0$

page 90, line 1-: at the end of the line, need $B\mu \sinh \mu b = 0$

page 92, line 16: in the interval $0 < L\sqrt{-\lambda} < \dots$

page 92, lines 18-19: The first one satisfies $0 < L\sqrt{-\lambda_1} < \dots$ while the second one satisfies $L\sqrt{-\lambda_2} > \dots$

page 95, line 13:

$$\int_a^b \bar{\phi}(x)[s(x)\phi'(x)]' dx + \int_a^b [\lambda\rho(x) - q(x)]\bar{\phi}(x)\phi(x) dx = 0$$

page 95, line 15:

$$\int_a^b \phi(x)[s(x)\bar{\phi}'(x)]' dx + \int_a^b [\bar{\lambda}\rho(x) - q(x)]\bar{\phi}(x)\phi(x) dx = 0$$

page 100, line 11: delete minus sign before $\text{div}(k \text{ grad } u)$

page 101, line 12: the integrand tends to...

page 101, line 13: $q_x^x(x_1, y_1, z_1)$

page 103, line 4: $-hT_1$ and.... (delete k)

page 103, line 5: $krL/K - kB$ (change + to -)

page 105, line 12-: $\sqrt{\pi K\tau}$

page 108, exercise 4: conditions: $[k(\partial u/\partial z) - h(u - T_0)](x, y, 0) = 0,$

$[k(\partial u/\partial z) + h(u - T_0)](x, y, L) = 0$

page 109, exercise 16: $\frac{1}{2}\tau < t < \tau$

page 113, line 5-: $u(z; t) = O(e^{-at})$ (capital O)

page 120, exercise 6: $u_z(0; t) = 0, u_z(L; t) = 0$

page 123, line 6-: $U''(z) - \sum_{n=1}^{\infty} \dots$

page 125, line 14-: $u_z(L; t) = 0$

page 125, line 1-: $v(z; 0) = T_3 - T_1$

page 126, line 10-: $B\sqrt{\lambda} \cos(L\sqrt{\lambda})$ (delete both minus signs)

page 127, line 7-: where h, T_1, T_2 and T_3 are

page 127, line 1-: $U(z) = T_1 + hz(T_2 - T_1)/(1 + hL)$

page 130, line 3-: change v_n to f_n

page 131, line 3: $u_t - Ku_{zz} = \dots$

page 131, line 5: $u_n(0) = f_n$

page 131, line 7: $u_n(t) = f_n e^{-\lambda_n Kt} + \dots$

page 131, line 10-: $\dots + L \cos \alpha \cos \beta = 0$ (change sin to cos)

page 136, line 1:

$$-T^-(a, t) \frac{(\partial \mathbf{r}/\partial s)(a; t)}{|(\partial \mathbf{r}/\partial s)(a; t)|} =$$

page 139, line 13: substitute into (2.4.9)

page 141, line 1: developed in Sec. 1.2.4

page 143, line 10: substitute this into (2.4.12) and get

page 151, exercise 4: ...solution of the wave equation with

page 152, exercise 16: $= cf(x + ct) + cf(x - ct)$

page 154, line 16: $1 = \sum_{m,n=1}^{\infty}$

page 154, line 20: $u(x, y; t) = \frac{4}{\pi^2} \sum_{m,n=1}^{\infty}$

page 157, line 11-: $\frac{4}{\pi^2} \sum_{m,n=1}^{\infty}$
 page 158, line 14: $\sum_{m,n=1}^{\infty}$
 page 158, line 20: $\sum_{m,n=1}^{\infty}$
 page 158, line 22: $\sum_{m,n=1}^{\infty}$
 page 158, line 25: $\sum_{m,n=1}^{\infty}$
 page 160, line 8: $\sum_{m,n=1}^{\infty}$
 page 163, line 16: $2^3 \cdot 5$
 page 165, line 3-: when $x = 0, x = L_1$
 page 169, exercise 12: $u(x, L; t) = 0$
 page 172, line 3-: $\frac{\partial^2 U}{\partial \varphi^2}$
 page 173, line 4-: change $u_{\rho\rho}$ to $u_{\varphi\varphi}$ at end of line
 page 175, line 10-: $-k \frac{\partial u}{\partial \rho} |_{\rho=\rho_2} = \frac{-k}{\rho_2} \frac{T_2 - T_1}{\ln(\rho_2/\rho_1)}$
 page 176, line 2-: boundary conditions $u(1, \varphi) = 0$ and $u(2, \varphi) = 1 \dots$
 page 177, line 11: where \dots are the Fourier coefficients
 page 178, line 22: $R^{-n} B_n$
 page 187, line 3: $= \frac{a_0}{\rho \sqrt{\lambda}} \sum_{n=0}^{\infty} \dots$
 page 189, line 4-: $-ie^{-i\theta} e^{ix \cos \theta} d\theta$ (insert minus sign in exponent)
 page 189, line 3-: $= - \int_{-\pi}^{\pi}$ (insert minus sign before integral)
 page 190, line 8: $= -\frac{x}{m}$
 page 191, line 10: $\dots + \frac{d-1}{\rho} y_1' + \dots$
 page 191, line 13: ...a first-order linear equation for v' , which

page 196, lines 1-2: since $\rho \rightarrow \theta(\rho)$ is unbounded when $\rho \rightarrow \infty$. From.....
 page 197, line 2: $(\sqrt{x} J_m)'(x) = R(x) \cos \theta(x)$. The equation $\cos \beta J_m(x) + x \sin \beta J_m'(x) = 0$ is.....
 page 198, line 5: (3.2.37) $[(xy')^2]' + (x_n^2 x^2 - m^2)(y^2)' = 0$
 page 200, line 1: ...formulas (3.2.18)-(3.2.19) in the...
 page 201, line 7-: For $m = 0, \beta = 0, \dots$
 page 202, line 11: $A_n \int_0^1 J_0(x x_n)^2 x dx = \dots$
 page 204, line 3: **jj[3.5,4]**
 page 204, line 6-: **jj[3.8,3.85]**
 page 208, exercise 24: $1 = J_0(x) + 2J_2(x) + 2J_4(x) + \dots$ and $0 = J_1(x) + J_3(x) + J_5(x) + \dots$ (change minus sign to plus sign in two places
 page 208, exercise 33: $F_3(\rho) = \sum_{n=1}^{\infty} J_1(\rho x_n)/x_n^3 J_2(x_n)$
 page 211, line 11-: the initial conditions (3.3.2)-(3.3.3).
 page 213, line 9-: while $A_{0n} =$
 page 214, line 3: we take $c = 1, a = 1, \dots$
 page 214, line 5: $\cos(tx_n^{(m)})$ (delete c)
 page 218, line 8: with $\beta = 0, m = \dots$
 page 219, line 11: $U(\rho_{max}) = T_1$.
 page 219, line 12: $U(\rho_{max}) = T_1$.
 page 221, line 14: with $\cot \beta = h\rho_{max}/k$
 page 221, line 15:

$$1 = \frac{2k\rho_{max}}{h} \sum_{n=1}^{\infty} \frac{J_0(x x_n)}{[x_n^2 + (h\rho_{max}/k)^2] J_0(x_n)} \quad 0 < x < 1$$

page 221, line 16:

$$1 - x^2 = \frac{8k\rho_{max}}{h} \sum_{n=1}^{\infty} \frac{J_0(x x_n)}{x_n^2 [x_n^2 + (h\rho_{max}/k)^2] J_0(x_n)} \quad 0 < x < 1$$

page 221, line 18:

$$A_n = \frac{2}{[x_n^2 + (h\rho_{max}/k)^2] J_0(x_n)} (\dots)$$

page 222, line 3: $-\pi \leq \varphi \leq \pi$
 page 222, line 10-: theory of Sec. 1.6.....
 page 223, line 6: $\sum_{m,n} R_n^{(m)}(\rho)$
 page 223, line 11:

$$u(\rho; t) = U(\rho) + \sum_{n=1}^{\infty} A_n R_n(\rho) e^{-\lambda_n K t}$$

page 223, line 12: where $\lambda_n = \lambda_n^{(0)}$, $R_n = R_n^{(0)}$, ...
 page 223, line 14:

$$|2\pi A_n| = \left| \int_{\rho_1}^{\rho_2} [f(\rho) - U(\rho)] R_n(\rho) \rho d\rho \right|$$

page 223, line 15:

$$\leq M_2 \int_{\rho_1}^{\rho_2} \rho |R_n(\rho)| d\rho$$

page 223, line 16:

$$\leq M_2 \left(\frac{\rho_2^2 - \rho_1^2}{2} \right)^{1/2}$$

page 223, line 18: the series $\sum_{n=1}^{\infty} A_n R_n(\rho) e^{-\lambda_n K t}$
 page 225, line 8: $\lambda = i\omega/K$ (delete minus sign)
 page 226, exercise 4: $u_t = K \nabla^2 u + \sigma$ (insert u)
 page 228, line 22: (3.5.8) $\gamma = -\nu$ (delete $= -m^2$)
 page 232, line 14: $1 = \frac{8}{\pi} \dots$ (change z to 1)
 page 238, line 1: Thus $w_t = ru_t, w_r = ru_r + u, \dots$ (change u to w)
 page 241, line 10: $f(r) = T_2, \dots$
 page 244, lines 7-8: if and only if $\tanh(a\mu) = ka\mu/(k - ah)$
 page 244, line 5-: (4.1.19) $\int_0^a [rf(r) - W(r)] \dots$ (change φ to f)
 page 247, line 10-: $(C_n \cos \frac{n\pi ct}{a} + D_n \sin \frac{n\pi ct}{a})$
 page 247, line 6-: that $C_n = (2aC/n\pi)(-1)^{n+1}, \dots$
 page 248, line 13: $(C_n \cos \frac{n\pi ct}{a} + D_n \sin \frac{n\pi ct}{a})$
 page 248, line 7-: $-\frac{2E}{a} \cos(n\pi ct/a) \dots$ (change C to E)
 page 255, line 5-: $(\frac{d}{ds})^k (s^2 - 1)^k = \dots$
 page 257, line 7-:

$$= s \frac{(2n-2)!}{2^{n-1} [(n-1)!]^2} s^{n-1} + \text{lower order terms}$$

page 257, line 1-: $\frac{2}{2j+1} c_j^n = \dots$
 page 258, line 9: The integrals (4.2.17) can be used....
 page 259, line 2: in the form $[(1-s^2)P_k']' + k(k+1)P_k = 0$
 page 259, line 6:

$$2A_k = \frac{2k+1}{k(k+1)} [(1-a^2)P_k'(a) - (1-b^2)P_k'(b)]$$

page 262, line 3 after table: $\Theta^{(m)}$ (change argument to superscript)
 page 264, line 4: (4.2.27) $\cos \beta f(a) + a \sin \beta f'(a) = 0$ (change R to a in three places)
 page 264, line 8: $\int_0^a \dots$
 page 264, line 10: $\int_0^a \dots = (\pi/4)a^2 J_{k+1/2}'(a\sqrt{\lambda})^2$ (change R to a in three places)
 page 264, line 11: $(\pi/a^2)(\lambda + \cot^2 \beta - m^2/a^2) J_{k+1/2}'(a\sqrt{\lambda})^2$ (change R to a in three places)
 page 269, line 15: $u(a, \theta, \varphi) = \cos \varphi P_{11} + \frac{1}{3} \cos 2\varphi P_{21}$
 page 269, line 20: $= \pi A_{km} a^k \int_0^\pi \dots$
 page 269, line 21: $= \pi B_{km} a^k \int_0^\pi \dots$
 page 271, line 13: $u(r, \theta) = (r \cos \theta)/(1+a)$

page 273, line 3: $-\int \int \int_{r \leq a}$
 page 273, line 4: $\partial u / \partial r = -A_{00} / r^2 + \dots$
 page 273, line 7: $-\frac{A_{00}}{a^2} 4\pi a^2 = \dots$
 page 274, line 12:

$$= \frac{\delta}{6} (2a^3 + \frac{3}{2}\pi a^2 b + 4ab^2 + \frac{3\pi b^3}{8})$$

page 274, line 14: $\dots \delta \cos \theta r^3 \sin \theta \dots$
 page 274, line 15: $= \frac{\delta}{8} \int_0^\pi (a + b \cos \theta)^4 \cos \theta \sin \theta d\theta$
 page 274, line 8-: $A_{20} = \dots r^4 \sin \theta \dots$
 page 274, line 7-: $= \frac{\delta}{20} \int_0^\pi (a + b \sin \theta)^5 \dots$
 page 274, line 3-:

$$A_{20} = -\frac{\delta}{20} \left[\frac{5a^4 b \pi}{8} + \frac{16a^3 b^2}{3} + \frac{15a^2 b^3 \pi}{8} + \frac{64ab^4}{21} + \frac{25b^5 \pi}{128} \right]$$

page 280, line 11-: $e^{-ia\mu} F(\mu)$ is the Fourier transform...
 page 286, lines 3-, 4-: delete "which is satisfied..... $< \infty$ " and add period after " $f(0) = 0$ ".
 page 289, line 18: $\int \int_{x^2+y^2+z^2=R^2} \dots$
 page 291, line 3: $= -|C|^2 A \dots$ (insert minus sign after equality)
 page 307, line 8: $\int_0^x e^{h(x-\xi)} (h+a)e^{a\xi} d\xi$ (delete minus sign)
 page 307, line 12: $\int_0^\infty e^{-a\xi} \dots$ (insert minus sign)
 page 311, line 1-: delete " $= 0$ " at end of equation
 page 316, line 10: $F(\mu) = \frac{1}{\sqrt{2\pi}} \dots$
 page 319, line 2: $f_k(x) dx$ (change i to k subscript)
 page 319, line 4: $F_k(\mu) d\mu$
 page 322, line 3-: gives $z(\xi, \eta) = \psi(\eta) + \dots$
 page 328, line 10: $(\nabla^2 f)(P + \xi) dS$ (change $d\xi$ to dS)
 page 332, line 2-: $u(x, y) = \dots e^{-i\mu\xi} \dots$ (insert minus sign in exponent)
 page 338, line 3-:

$$= \int_{-\infty}^{\infty} (v_t [c^2 v_{xx} - (\alpha - \beta^2)v] + c^2 v_x v_{xt} + vv_t) dx$$

(insert parentheses where needed)

page 346, line 10:

$$\int_1^n \log x dx < \dots < \int_1^{n+1} \log x dx$$

page 346, line 12:

$$\text{and } \int_1^{n+1} \log x dx \leq \int_1^n \log x dx + \log(n+1)$$

page 346, line 14: $n \log n - n + 1 < \log 2 + \dots + \log n < n \log n - n + 1 + \log(n+1)$

page 346, line 15:

$$\log n - 1 - \frac{1}{n} < \frac{\log 2 + \dots + \log n}{n} < \log n - 1 + O\left(\frac{\log n}{n}\right)$$

page 350, lines 1-, 2-: we can allow $b = \infty, a > -\infty$ in case ...
 page 351, line 17: above expression is $O(e^{tH}/t)$ when...
 page 356, line 2: (6.3.6) $h(x) \leq H - \dots$ (change \geq to \leq)
 page 356, line 7: $O\left(\frac{e^{tH}}{t}\right)$.
 page 356, line 8-: $O\left(\frac{e^{tH}}{t}\right)$.
 page 356, line 1-: $\leq t e^{tH} \dots$
 page 357, line 3: $O\left(\frac{e^{tH}}{t}\right)$.
 page 359, line 2: $F(\mu) = \frac{1}{2\pi} \int_{-\infty}^{\infty} \dots$

page 360, line 2: $\sqrt{\frac{2\pi}{th_2 - \gamma}}$
 page 360, line 8-: $= -(2\tau + \dots)$ (insert 2)
 page 364, line 7: $J_m(t) = \sqrt{\frac{2}{\pi t}} \cos(\dots)$
 page 367, line 5:

$$I = \sqrt{\frac{\pi}{4}} e^{i\pi/4}$$

page 373, line 2:

$$\phi_+(\mu) = \dots, \phi_-(\mu) = \dots \quad (\text{change } + \text{ to } -)$$

page 384, line 11:

$$(7.1.11) \quad Y_{n+1} = Y_n + \frac{h(f(t_n, Y_n) + \dots)}{2} \quad (\text{insert } h \text{ in numerator of fraction})$$

page 387, line 4-: ...we recall the *big* - *O*...
 page 390, line 1: ...error bound (7.1.17) for...
 page 390, line 5: $\epsilon_{n+1} = \epsilon_n + 2h^2$
 page 390, line 7: $\epsilon_n = 2nh^2$
 page 390, line 9: $\epsilon_n = 2t_n h$
 page 393, lines 18-19: ...maintained at equal temperatures.
 page 393, line 6-: ...for $i = 0, 1, \dots, n + 1$
 page 402, line 13:

$$u_i(t + \Delta t) + u_i(t - \Delta t) = u_{i+1}(t) + u_{i-1}(t) \quad (\text{change } = \text{ to } +)$$

page 405, line 5: We have $K\Delta t/h^2 = \dots$
 page 410, line 5-: $\varphi(P) dP$ (delete $w(P)$ before dV)
 page 416, line 5-: $\dots a^4 x^2 - a^4 y^2$ (change = to -)
 page 416, line 4-: $= (16/9)\rho c a^6$ (change 8 to 6 in exponent)
 page 417, line 3: ...of the form $u = c \cos(\pi x/2a) \cos(\pi y/2a)$ and.... (insert c after =)
 page 417, line 7: Likewise $\int \int \rho u \, dx \, dy = \rho c (4a/\pi)^2$
 page 417, line 9: is attained at $c = 32\rho a^2/\pi^4$ (delete slash)
 page 417, line 10: $\Phi(c) = -(256/\pi^6)\rho^2 a^4$
 page 418, line 11:

$$u_y = - \sum_{j=0}^N c_j(x) \left(j + \frac{1}{2}\right) \frac{\pi}{a} \dots \sin \dots$$

page 418, line 13:

$$= \sum_{j=0}^N \int_{-a}^a \left[a c_j'(x)^2 + \left(j + \frac{1}{2}\right)^2 \left(\frac{\pi}{a}\right)^2 c_j(x)^2 - a \rho c_j(x) \frac{(-1)^j}{j + \frac{1}{2}} \left(\frac{a}{\pi}\right) \right] dx$$

page 418, line 15:

$$c_j''(x) = \left(j + \frac{1}{2}\right)^2 \left(\frac{\pi}{a}\right)^2 c_j(x) - \frac{\rho(-1)^j}{j + \frac{1}{2}} \left(\frac{a}{\pi}\right)$$

page 418, line 17:

$$c_j(x) = \left[\frac{\rho(-1)^j}{\left(j + \frac{1}{2}\right)^3} \left(\frac{a}{\pi}\right)^3 \right] (\dots)$$

page 421, line 15:

$$0 = \int_{-a}^a \int_{-b}^b [(-2(a^2 - x^2) - 2(b^2 - y^2))] \dots$$

page 421, line 17: $5\rho/8(a^2 + b^2)$
page 422, line 5:

$$u(x, y) = \frac{64a^2b^2}{\pi^4} \dots$$

page 424, line 18: $C_0 = \rho/2(k^2 - 1)$
page 426, line 12: if $L_2/2 < y < L_2, L_1(L_1 - y)/L_2 < x < L_1y/L_2$ (insert $<$ sign)
page 426, line 17: if $L_2/2 < y < L_2, L_1(L_1 - y)/L_2 < x < L_1y/L_2$ (insert $<$ sign)
page 430, line 14: Theorem 8.1. Suppose that zero is not an eigenvalue of (8.1.1). Then.....
page 432, line 7: $C = \int_0^1 (1 - 9\xi/5 + \xi^3/2)f(\xi) d\xi$
page 437, line 17:

$$\lim_{\epsilon \downarrow 0}$$

page 437, line 18: $= -\frac{(P-Q_0) \cdot n}{4\pi|P-Q_0|^3}$ (change Q to Q_0)
page 438, line 13:

$$\int \int \int_{D_\epsilon} \dots = \int \int_{\partial D_\epsilon} \dots \quad (\text{change } - \text{ to } =)$$

page 439, line 5-: ...point Q' is suitably chosen with $Q' \notin D$ and...
page 440, line 8: $C = /4\pi|Q|$
page 441, line 8: $P = (\rho \cos \varphi \sin \theta, \rho \sin \varphi \sin \theta, \rho \cos \theta)$
page 441, line 12: $\frac{\partial G}{\partial \tau}$ (change r to τ)
page 445, line 4-: $\int u \partial g / \partial n \rightarrow u(P)$ (delete minus sign)
page 445, line 1-: $u(P) = - \int_{\partial D} \dots$
page 453, line 7: $= \int_0^L \dots$ (change odd to 0)
page 453, line 8: $= - \int_0^L \dots$ (change odd to 0)
page 454, line 3:

$$= \frac{1}{\sqrt{4\pi Kt}} \sum_{-\infty < m < \infty} (e^{-(x-y-2mL)^2/(4Kt)} - e^{-(x+y-(2m+2)L)^2/(4Kt)})$$

page 455, line 4:

$$h(P; t) = \dots H(\mu; t) d\mu$$

page 455, line 5-:

$$u(P; t) = \dots ds \int \int_{|xi|=cs} e^{i(\mu, \xi)} d\xi$$

page 455, line 2-:

$$= \dots e^{i(\mu, P+\xi)} H \dots$$

page 456, line 3: delete the second dQ at the end of the line
page 456, line 11-:

$$= \int_0^t M_{c(t-s)}((t-s)h^{(s)})(P) ds$$

page 457, line 4:

$$u(P; t) = \dots + \frac{t}{4\pi} \dots \quad (\text{change } = \text{ to } +)$$

page 457, line 4-:

$$+ \frac{1}{4\pi t} \int \int_{|\xi|=ct} (\nabla^2 f)(P + \xi) d\xi$$

page 457, line 2-:

$$+ \frac{1}{4\pi t} \int \int_{|\xi|=ct} (\nabla^2 f)(P + \xi) d\xi$$

page 459, line 14-: ...right side of the wave equation is written...

page 461, line 17: ... $w_{xx} = v_{xx}e^{(ky/c)}$

page 462, line 17:

$$\frac{1}{2}[f_1(x+ct) + \dots + \frac{k}{2c} \int_{-ct}^{ct} f_1(x-\xi)I_1 \dots \quad \text{move } c \text{ from first term to second term and change } f_2 \text{ to } f_1$$

page 470, line 15: ...

$$= e^t \frac{dY}{ds} + e^{2t} \frac{d^2Y}{ds^2} = s \frac{dY}{ds} + s^2 \frac{d^2Y}{ds^2} = sY' + s^2Y''$$

page 473, line 4-: $y'' = \sum_{n=1}^{\infty} (n+1)ny_n t^{n-1}$

page 477, line 6-: $= (1 - M^{1-p})/(p-1)$

page 480, line 7-: we have $f_{n-1}(x) = \dots$

page 480, line 4-: we have $f_{n-1}(1/n) = \dots$

page 480, line 3-: $|f_{n-1}(x_n) - f(x_n)|$

page 484, line 3:

$$\dots < (1 - x^{N+1})2M + \epsilon/2$$

page 484, line 4: If $1 - x^{N+1} < \epsilon/4M$

page 485, line 8-: insert comma after first appearance of $t \rightarrow \infty$

page 485, line 7-: insert comma after first appearance of $t \rightarrow \infty$

page 503, line 2-: answer to 1(d) is $\dots Y' + (\lambda - 1)Y = 0$

page 504, line 8: answer to 5 with $\lambda < 0$ is

$$u(x, y) = [A_1 \cos(\sqrt{-\lambda} \ln |x|) + A_2 \sin(\sqrt{-\lambda} \ln |x|)](A_3 e^{y\sqrt{-\lambda}} + A_4 e^{-y\sqrt{-\lambda}})$$

page 504, line 17: Answer to no. 3 in 0.2.4 is $u_n(x, y) = A_n \sin(n\pi x/L)e^{-(n\pi y/L)}$, $n = 1, 2, \dots$

page 504, line 8-: answer to no. 1(d) in 0.3 is 7 (not 13)

page 505, line 6: $\frac{6}{(n\pi)^3}$

page 505, line 9: answer to no. 5 in 1.1 is $\frac{1}{2} - \frac{1}{2} \cos 4x$

page 505, line 10: answer to no. 6 in 1.1 is $\frac{1}{2} \cos 3x + \frac{3}{4} \cos x$

page 505, line 19: answer to 16(c) needs $1 + (n\pi/L)^2$ in denominator

page 506, line 11: answer to 16(d) is $\pi^2/4$

page 506, line 5-: σ_N^2 (sine series) $= \dots = O(N^{-5})$

page 507, line 7: $e^x = \dots \frac{L_i n \pi}{L^2 + n^2 \pi^2} \dots$ (delete extra factor of n)

page 507, line 8: $\frac{1}{1 - re^{i\pi}} = \sum_{n=0}^{\infty} r^n e^{in\pi} \dots$

page 507, line 11: answer to no. 2 in 1.6 should read "...is a root of the transcendental equation $2h\sqrt{\lambda} \cos(L\sqrt{\lambda}) + (h^2 - \lambda) \sin(L\sqrt{\lambda}) = 0$, $n = 1, 2, \dots$

page 507, line 2-: answer to no. 3 in 2.1 should read $U(z) = \Phi(z - L) + T_0$

page 507, line 1-: answer to no. 4 in 2.1 should read $U(z) = \dots / (2K + hL)$

page 508, line 1: answer to no. 5 should end with $\dots \frac{\sinh(L-z)\sqrt{\beta/K}}{\sinh L\sqrt{\beta/K}}$

page 508, lines 8-9: solution to no 10, change t 's to τ 's in six places, thus

$$u(z; t) = A_0 + A_1 \exp\left[-z\sqrt{\frac{\pi}{K\tau_1}}\right] \cos\left(\frac{2\pi t}{\tau_1} - \sqrt{\frac{\pi}{K\tau_1}}z\right) \\ + A_2 \exp\left[-z\sqrt{\frac{\pi}{K\tau_2}}\right] \cos\left(\frac{2\pi t}{\tau_2} - \sqrt{\frac{\pi}{K\tau_2}}z\right)$$

page 508, line 15: delete c before \sin , thus $\dots \cos(\beta t - cz) + \sin(\beta t - cz) \dots$

page 509, line a8: answer to no 3 in 2.3 need a plus sign before $\frac{2}{L}$, thus $A_n = \dots + \frac{2}{L}(T_2 - T_1) \dots$

page 510, line 4: in answer to no. 19, insert ds after $g_2(s)$

page 510, lines 22-23: $u(x, y : t) = \dots \exp[-(\frac{n\pi}{L_2})^2 Kt]$ (change L to L_2 ,

$$A_n = \frac{2(T_3 - T_1)(1 - (-1)^n)}{n\pi} + \frac{2(T_1 - T_2)(-1)^n}{n\pi} \quad (\text{delete } L_2)$$

page 511, line 15: answer to no. 15 in 3.1 is

$$u(\rho, \varphi) = \frac{\ln \rho}{2 \ln 2} - \frac{1}{\pi} \sum_{n=1}^{\infty} \left[\frac{\rho^n - \rho^{-n}}{2^n - 2^{-n}} \right] \dots$$

page 511, line 4-: answer to no 1 in 3.3 is $U(\rho) = (g/4c^2)(\rho^2 - a^2)$

page 511, line 2-, 3- replace R by a everywhere, thus

$$u(\rho, \varphi; t) = \sum_{n=1}^{\infty} A_n J_0(\rho x_n/a) \cos\left(\frac{ctx_n}{a}\right), \quad J_0(x_n) = 0$$

$$A_n = \frac{2x_n^2}{J_1(x_n)^2} \int_0^a F_1(\rho) J_0\left(\frac{\rho x_n}{a}\right) \rho d\rho$$

page 511, line 1-:

$$u(\rho, \varphi; t) = \sum_{n=1}^{\infty} A_n J_0(\rho x_n/a) \sin\left(\frac{ctx_n}{a}\right), \quad A_n = \frac{2}{acx_n J_1(x_n)^2} \int_0^a$$

page 513, line 19: answer to no. 4 in Sec. 4.1 should read $(\cot \theta)/r^2$.

page 513, line 3-: answer to no. 18, change 62 to exponent of 2, thus $\dots \exp[-(\frac{n\pi}{2a})^2 Kt] + T_1$

page 513, line 2-: change 9 to left parenthesis in exponent, thus $\exp[-(\frac{n-\frac{1}{2}\pi}{a})^2 Kt]$

page 514, line 4: answer to no. 1 in Sec 4.2 should read $0, -\frac{1}{2}, 0, \frac{3}{8}$

page 514, lines 9-12: change "11." to "12.", "12." to "13.", "13." to "14.", "14." to "15."

page 514, line 22: $u(r, \theta) = \dots + \frac{4}{5}(r/a)^3 \dots$

page 515, line 4: answer to no. 5 in 5.1 should have

$$F(\mu) = \frac{1}{2\pi} \left[\frac{1}{1 + (1 + \mu)^2} + \dots \right]$$

page 517, line 1-

$$\frac{(1 + hz)}{h(2 + hL)} [I + h(L - x)]$$

page 518, line 2: change "6." to "5." and change \sqrt{k} to $\sqrt{-k}$ in denominator of second formula

page 518, line 3: change "7." to "6."

page 518, line 4: change "8." to "7."

page 518, line 11: in solution to no. 1 in Sec 8.4, insert ds at end of line

page 518, line 12: in solution to no. 2 in Sec 8.4, insert ds at end of line

page 518, line 13: in solution to no. 3 in Sec 8.4, insert $d\eta ds$ at end of line

page 522, line 5 of left column: instead of "de Moivre's formula.", it should read "Euler's formula, 78, 81" and be moved to line 7- of the same page.