Errata for
Introduction to Partial Differential Equations
with MATLAB

page	line	correction
56	b7	equation reference should be (2.34).
64	t12	all constants $\alpha > 0$
75	b13	$F(x,t) = -ku_x(x,t)$.
80	t3	$\max_{\Gamma_{T,a}}[u(x,t) - \varepsilon(kt + x^2/2)]$.
83	b10	$\int S(y,t)dy = 1$.
87	t1	$S(x-y,t)$, as $y \to \pm\infty$.
120	t8	$0, \ 3L/4 \leq x \leq L$.
125	t15	In example (1), pay special attention to the behavior at $x = 0$ and at $x = \pi$. In example (2), at $x = \pi/4, 3\pi/4$.
131	b8	$-\int_0^L w''z dx = (-w'z + wz')\Big\|_0^L - \int_0^L wz'' dx$
142	t5	$q(t,x)$ should be $q(x,t)$.
143	b2	dx should be ds.
144	t2	$u(0,t) = u(L,t) = 0$.
150	t2	Consider the IBVP (4.41) with $f(x) = 0$, boundary conditions
150	b9	$U(x) = Ax^3 + Bx + C$; find the coefficients A, B, C.

153	b11	$\varphi(x) = \sin[(x+L)\sqrt{\lambda/k_l}]$ for $x < 0$, $\varphi(x) = \gamma\sin[(x-L)\sqrt{\lambda/k_r}]$ for $x > 0$
158	b2	(In an ideal gas, $P(\rho) = A\rho^\gamma, \gamma > 1$. For air, $\gamma = 1.4$).
159	b12	$c_0^2 = A\gamma\rho_0^{\gamma-1}$.
164	b1	$\approx (T_0 + \varepsilon T_0'\bar{u}_x)\mathbf{i} + \dots$
165	b12	$c_1 = \sqrt{T_0'/\rho_0}$.
176	t13	u_{xx} should be u_x.
184	t2	$(1/2)[f(x+ct) + f(x-ct) - f(ct-x)] = \dots$
202	b6	$r_n = \dots = (-2/n\pi)(-1)^n$.
208	b5	In the right-hand side, $u_{j,n-1}$ should be $u_{j-1,n}$.
229	t9	$L/2 < \|x\| \leq L$.
243	t2	$1 \leq k \leq N/2$
256	b2	when $N < N_*$.
260	t1	$f''(y)$ should be $f''(x)$.
262	b2	$\phi''(x)$ should be $\phi''(x_0)$.
264	b5	$E^2 = c^2p^2 + c^4m^2$.
269	b5	$m\sigma/\sqrt{1-\sigma^2}$
284	t11	$-\xi^2/(4\mu_\varepsilon) = -(\varepsilon + i)\xi^2 t$

289	t11	$\hat{\varphi}_l(\xi) = \ldots = \sqrt{2\pi l}\; e^{-l^2(\xi-\xi_0)^2/2}$
290	t8	$\int_R \lvert\varphi_l(x)\rvert^2\; dx = \sqrt{2\pi}$
306	b1	$\int\int_G(-\Delta u)v\; dxdy = -\int_{\partial G} v\; \partial u/\partial n\; ds + \ldots$
322	t2	$\frac{\partial\varphi}{\partial\theta}(r,0) = \frac{\partial\varphi}{\partial\theta}(r,\beta) = 0$
	t6	$\Phi'(0) = \Phi'(\beta) = 0.$
336	t13	light cone $\{(\mathbf{x},t) : \lvert\mathbf{x}\rvert < ct - a\}$ for $ct > a$.
337	t1	Consider the IVP $u_{tt} - \Delta u = 0$ in $R^3 \times R$. (You should take $c = 1$).
351	t5	$(1/2)(d/dt)\int\int_G[u_t^2 + c^2\lvert\nabla u\rvert^2]\; dxdy = c^2\int_{\partial G} u_t\; \partial u/\partial n\; ds.$
351	b10	$c^2\int_{\partial G} hu^2\; ds$
410	t15	$\gamma(\mathbf{x},\mathbf{y}) \geq 1$ on $\lvert\mathbf{x}-\mathbf{y}\rvert = \varepsilon$.
422	b12	$\mathcal{A} = \{u \in C[0,1] : u(0) = u(1) = 1\}.$
450	t8	$\int_b^a u(x,t)dx$ should be $\int_a^b u(x,t)dx$.
457	t3, t4	delete a from denominator
470	b3	$\sum_1^\infty A_n \sin(n\pi\theta/(2\alpha))r^{n\pi/(2\alpha)}$
484	t7	the factor `x.*exp(-sin(x))`.
	b8	`z = exp(-(x.^2 -y.^2)./(4*t))./(4*pi*t)`