ERRATA
Guillemin and Pollack, Differential Topology

p. 3 pictures In the second and third pictures in the top line, we should see over-crossing arcs, not crossing arcs.

p. 5 #4 $|x| < a$

p. 6 #8 hyperboloid

p. 7 #18b $g(x) = f(x - a)h(b - x)$; $h(x) = \frac{\int_{-\infty}^{x} g(t) \, dt}{\int_{-\infty}^{\infty} g(t) \, dt}$

p. 12 #8 hyperboloid, and delete the parentheses

p. 16 line 16 in $f(X) \subset Y$

p. 24 line –11 “In particular, taking $X$ to be . . . ”

p. 25 #6 This is the definition of homogeneity of degree $m$; 0 is the only possible critical value

p. 27 #11(a) Remark: This is really a special case of Exercise 6.

#13 Delete “of” at the end of the first line.

p. 28 line 9 $g \circ f : U \to \mathbb{R}^\ell$

p. 45 #6 simply connected

p. 48 #22 $r_i = |x - x_i|$

p. 51 line –9 $g(x, \frac{1}{t} v)$

p. 52 line –15 exercise 15

p. 55 #11 $f^{-1}(a)$ should be $\{x \in X : F(x, v) = a \text{ for some } v\}$. The HINT should read as follows. Show first that $F^{-1}(a)$ lies in a compact subset $\{(x, v) : |v| \leq \text{constant}\}$ of $T(X)$: for if $F(x_i, v_i) = a$ and $|v_i| \to \infty$, pick a subsequence . . . . Now use the proof of the Stack of Records Theorem (p. 26, #7) to show that $F^{-1}(a)$ is indeed finite.

p. 56 #15 $A$ and $B$ are disjoint, closed subsets.

p. 61 line 6 $Z = \phi^{-1}(0)$

line –6, –5, –3 $dg_s$ and $d(\partial g)_s$ map to $\mathbb{R}^\ell$

p. 62 line 1 $\ker dg_s$ has dimension $k - \ell$, $\ker (\partial g)_s$ has dimension $k - \ell - 1$

p. 64 #10 $df_z(\vec{n}(z)) < 0$

p. 66 #4 $|x| < a$

p. 70 line –10 $S \to \mathbb{R}^M$

p. 75 #7 affine subspace $V$; the map given in the hint should be $\mathbb{R}^\ell \times S \times \mathbb{R}^N \to \mathbb{R}^N$, defined by $(t, v, a) \mapsto t \cdot v + a$

#9 $f : \mathbb{R}^\ell \to \mathbb{R}$

p. 76 #18 $X \subset T(X)$ refers to $X \times \{0\}$

p. 83 #5 contractible; there still is a dimension 0 anomaly, so one should require $\dim X > 0$

#6 contractible

p. 84 #9 $I_2(f, Z) = 0$, $p \notin f(X) \cup Z$

p. 85 #15 closed manifold $C$

#16 Consider the submanifold $F^{-1}(\Delta)$

line –10 Corollary to Exercises 18 and 19, obviously
Not so fast! To apply Exercise 8, we must use the fact that $X$ is a compact hypersurface to produce a ray intersecting $X$ (and transversely).

small neighborhood of $-z/|z|$.

$\overline{D}_1$ is compact; “parametrization” in last line.

(b) nonzero normal vectors

What does it mean to define a manifold with boundary by independent functions?

$X$ orientable and connected

test

The denominator should be $|\tilde{v}(x) + tr(t, x)|$

$h_t(z) = e^t z$

$\tilde{v}_i$ should have only nondegenerate zeroes inside $U$

In the last formula, $g^{ij}$, not $g_{ij}$, where $(g^{ij}) = (g_{ij})^{-1}$

the matrix $(g^{ij})$ is nonsingular

sum of the indices of $f$ at its critical points

The new map will only agree with $f$ on the complement of a slightly larger ball, so it’s not quite an extension

$f(tx) = g_t(x)$

Replace $\rho$ with $\beta$, $b$ with $a$ in the last three lines

“Now apply the corollary of the special case” should be after the right parenthesis

$\rho$ is not a submersion, but the rest is right

$(T^{\pi}\sigma = T^{\sigma \pi}$

$df_I = df_{i_1} \wedge \cdots \wedge df_{i_p}$

$X$ is a $k$-dimensional oriented manifold with boundary

$f_1 \circ h, f_2 \circ h, f_3 \circ h$

$\tilde{F} = (f_1, f_2, f_3) \circ h$

The reference should be to Exercise 7

The reference should be to Exercise 12

We need $Z_0$ and $Z_1$ oriented, and the definition of cobordism needs to be updated to $\partial W = -Z_0 \times \{0\} \cup Z_1 \times \{1\}$.

$Y$ should be connected (cf. the proof on p. 191)

In the lemma, $X, Y$ should be compact, and $\int_S$ should be $\int_{X}$; in the proof, $U$ should be a connected neighborhood of $y$

$\frac{x}{x^2+y^2} dy$

last line: Identify $c$.

parallellepipded

Delete the $\frac{1}{2}$ before the Hessian matrix

updated November, 2018