CHANGES (apart from cosmetic improvements)

Changes : version 31 → 32

p.1 comment on Massey's book
p.4 for $w(\gamma, p)$ assume $X \subseteq \mathbb{R}^2$
p.7 α_A is iso in C_2 not C_1
p.10 in boxed theorem had $H^n(X;R)$
p.11 added missing proof for $\mathbb{R}^n \not\cong \mathbb{R}^m$
p.16 Rmk should say $H_*(A)$ $[-1]$

Changes : version 32 → 33

p.85 first case set $\tilde{H}_*(\overline{NX})$ not $\tilde{H}_{*+1}(\overline{NX})$
p.14 $/\operatorname{Im}\partial_{n+1}$ not $/\operatorname{Im}\partial_n$
p.19 added bracket comment about simplices being abstract
p.40 added Rmk

Changes : version 33 → 34

p.19/20 consistency condition added
p.25 Δ_i^{n-1} in def^n of ∂_n, and Remark
p.27 fixed def^n of $i_1(x) = (x,1)$
p.27 bottom Γ_n is combo of maps ...
p.29 top $P : \ldots \to C_{n+1}(\ldots)$
p.29 clarified meaning of "abbreviated notation"
p.30 cultural Rmk
p.31 fixed position of $\sim$ signs, discussed case $A = \emptyset$
p.33 added picture for excision
p.35 clarified where $[e^n]$ lives
p.37 explained "$\sigma \circ S$"
p.38 added details to excision thm proof

p. 39 added $A \cap B \neq \emptyset$ in M.V. for $\widetilde{H}_*$

p. 40 first lemma missing $\widetilde{H}_*$

p. 41 explained why $\text{const}_* = 0$, fixed S^{n-1} for $O(n)$ example

p. 42 for n odd $\exists v = \ldots, \pm x_{2k-1})$

p. 43 cleaned up proof of lemma

p. 43 explained why hpy in Example is cts at ∞

p. 44 fixed $U \cap \mathbb{D}^n_\alpha \subseteq \mathbb{D}^n_\alpha$ open (not $e_\alpha^{-1}(\ldots)$)

p. 45 observation ... (for $n=0$: $(X^0, \ldots)$)

p. 45 added description of coords for $\mathbb{CP}^n$

p. 46 top: $\partial\, \mathbb{D}^n_\alpha \leftarrow$ not m

p. 48 explained $\deg = 0$ in the S^1 case

p. 49 H_*^{CW} not H_*^{Δ} at top, and "$0 \Leftrightarrow * \neq n$" in proof in ④ should say "by ③"

p. 51 In triangle, $C_n \leftarrow C_{n+1}$
added $\partial^* \circ \partial^* = 0$ proof

p. 52 added meaning of cochain map

p. 53 fixed statement & remark about Baer 1937

p. 54 $1 \cup \phi = \phi \cup 1 = \phi$

p. 54 a few more words about useful trick

p. 55 top $\sigma[e_1] - \sigma[e_0]$

p. 55 graded comm pf is nonexaminable

p. 56 D_1 & D_2 in picture were swapped, & mentioned useful trick

p. 57 second red arrow in last picture in first row was wrong

p. 57 added hint to exercise

p. 58 added comment about $(\mathbb{R}^n)^* \otimes \mathbb{R}^m$

p. 59 reminders of what Z_*, B_*, PID mean

p. 59/60 reordered the paragraphs

p. 63 $a \cup a \to a \cup \tilde{a}$

Changes : version 34 → 35

p. 51 added warning about values on chains for cocycles φ.

p. 53 had forgotten to define $H^*(X,A)$ (relative cohomology)

p. 54 Useful trick : should use C_*^Δ not C_*^{CW}

p. 55 first line $1(\sigma|_{[e_1]}) - \cdots$

p. 57 cultural Rmk improved.

p. 59 added Corollary about rank-nullity

p. 60 B_{i+1} should be B_{i-1}.

p. 47 & p. 62 fixed colours in ∂e^2

p. 63 under box on left added "(chain level)"
in box on right added "and extend linearly"

p. 63 more details about $S^n \times S^n$ case
" " " T^n case

p. 64 added motivation
added comment in red why SES splits
added "and natural" in box

p. 65 $\cdots / \ker \varphi_1^*$ not $\ker \varphi_2^*$
$0 \to Z^{n-1} \to B^{n-1} \to 0$ not $B^{n-1} \to Z^{n-1}$

p. 67 big box: added "and natural"

p. 68 mentioned $T \cong \bigoplus R/p_i^{n_i}$

p. 70 boxed: $H_{*-1}(C_*)$ not C_{*-1}.
Example about $\mathrm{Tor}(R/u, \ldots)$ condition on u.

p. 71 bottom $M \cong$ simpl... not just $\simeq$

p. 71 Rmk about connectedness

p. 73 in def^n of local orient^n : removed map $H(M, M\setminus x) \to H(M, M\setminus y)$ since not needed & not natural

p. 74 Comment in red about $[M] = \sum \pm \gamma_i$
"Not difficult to see that $H_n^\Delta(M) = \mathbb{Z} \cdot [M]$"

p. 77 Lemma: left vertical arrow not an iso (ranks are different)
(proof only uses commutativity of diagram).

p. 79 added Rmk in red in (5)

p. 80 Corollary : added missing details to proof

p. 80 Example 2 : added extra comments.

p. 83 Step 2 : $A \cap B$ not $A \cap C$

p. 84 NEW PAGE - nonexaminable

p. 85 Jordan curve thm: $C \cong S^1$ not $\simeq$
$C \cong S^n$

cleaned up proof

p. 86 4th line of proof $\cong \tilde{H}_* (\overline{N}(X))$ not $\tilde{H}_{*-1}(\overline{N}(X))$

cleaned up proof & added details

Changes in Exercise sheets

sheet 1 ex 4 : $X \neq \emptyset$