TOPOLOGY 2, HOMEWORK 6

(1) Hatcher, Section 1.1 #6

(2) (a) For groups $G \cong \langle x, y \mid x^2 = y^3 \rangle$ and $H \cong \langle a, b \mid aba = bab \rangle$, show that $\phi(x) = bab$, $\phi(y) = ab$ determines an isomorphism (in particular, a homomorphism) $G \to H$.

   (b) Show that the *Baumslag–Solitar group* $BS(2,3) \cong \langle x, t \mid tx^2 t^{-1} = x^3 \rangle$ has a surjective self-homomorphism taking x to x^2.

   (*Challenge Problem*: is your surjective self-homomorphism an isomorphism?)

(3) Hatcher, Section 1.2 #6

(4) Hatcher, Section 1.2 #8

(5) Hatcher, Section 1.2 #11

(6) Hatcher, Section 1.2 #17