Kirby Moves Exercises

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Problem 1. (5.1.2a) Check formula for framing change under 2-handle slide by using parallel strand notation.

Problem 2. (5.1.2.c) Give an algorithm for sliding multiple strands of an attatching curve over another curve–what's the resulting framing? (See the associated picture for an example.)

Problem 3. Let X^4 be a manifold given by a Kirby diagram with only two handles, and let K_1, K_2 be attaching curves so that K_2 is a 0-framed meridian of K_1 (see the associated picture for a picture). Show that if K_1 has even framing, $X \cong Y \# (S^2 \times S^2)$ and if K_1 has odd framing, $X \cong Y \# (S^2 \tilde{\times} S^2)$, where Y has Kirby diagram obtained from that of X by erasing K_1, K_2. (See the associated picture for a hint).

Problem 4. Simplify figure 4 in the associated picture to a handle diagram with a single one handle and two handle. Assume all two handles are blackboard framed to begin.

Problem 5. Describe the four manifold given by figure 5 as $B^4 \cup$ (2-handle).