Throughout, $B_n$ is the braid group on $n$ strands and if $\beta$ is a braid then $C(\beta)$ denotes its braid closure.

**Exercise 5.1.** Name $C(\sigma_1\sigma_2^{-1}\sigma_1\sigma_2^{-1})$, $C(\sigma_1\sigma_2^{-1}\sigma_1\sigma_2^{-1}\sigma_1\sigma_2^{-1})$ and $C(\sigma_1\sigma_2^{-1}\sigma_1\sigma_2^{-1}\sigma_2^{-1})$.

**Exercise 5.2.** In $B_2$, for what values of $m$ and $n$ is $C(\sigma_1^n) \simeq C(\sigma_1^m)$?

**Exercise 5.3.** Give a necessary and sufficient condition on $\beta$ that $C(\beta)$ is a knot (and not a link).

**Exercise 5.4.** Find a braid $\beta$ such that $C(\beta)$ is the $6_1$ knot, shown below.

![Image of the 6_1 knot]

**Exercise 5.5.** For braids $\beta \in B_n$ and $\beta' \in B_n$, find a braid whose closure is $C(\beta) \# C(\beta')$.

**Exercise 5.6.** Give an infinite sequence of pairwise distinct braids whose braid closure is the figure 8 knot.

**Exercise 5.7.** Show that $\Delta \in B_n$, shown below for the case $n = 4$, is in $Z(B_n)$, the center of the braid group.

![Image of the 4-strand braid $\Delta$]