Math 10460 - Honors Mathematics II
Homework 7a - Due Wednesday, March 2

(1) Compute the following cycle products:
    (a) $(1\ 4\ 3\ 2)(1\ 2\ 5)$
    (b) $(1\ 2\ 5)(1\ 4\ 3\ 2)$
    (c) $(1\ 2)(1\ 3)$
    (d) $(1\ 2)(3\ 4)$

(2) For each cycle σ below, find the smallest positive integer n such that $\sigma^n = e$:
    (a) $\sigma = (1\ 2)$
    (b) $\sigma = (1\ 2\ 3)$
    (c) $\sigma = (2\ 3\ 4\ 5)$
    (d) $\sigma = (1\ 3\ 5\ 7\ 9)$

(3) In the previous problem, what do you notice about the number n in relation to the "length" of (number of entries in) the cycles?

The next three problems refer to the shapes you picked up in class last Wednesday. Be sure to identify which shape you use in each problem!

(4) Find the symmetry group of your 1st regular polygon. What is the physical symmetry subgroup?

(5) Find the symmetry group of your 2nd regular polygon. What is the physical symmetry subgroup?

(6) Find the symmetry group of your 3rd regular polygon. What is the physical symmetry subgroup?