

Writing Assignment 2

Due Thursday, May 29 in class

Recommended length: 1 - 2 pages.

Recommended format: typed.

Let G be a finite group acting on a finite set A . For each $g \in G$, let $F(g)$ be the number of points in A that are fixed by g :

$$F(g) = \#\{a \in A : g \cdot a = a\}.$$

Let N be the number of orbits of this group action. For this assignment, you are to write a proof that

$$N = \frac{1}{|G|} \sum_{g \in G} F(g)$$

In words, the number of orbits is equal to the average number of fixed points (the average being taken over all the elements of the group).

I will post a hint or two, but I recommend trying to figure it out first by yourself. (If you're stuck, don't wait too long to look at the hints and/or get help: again, the emphasis here is on the writing.)

Take advantage of our TA (Bob Hough, : rdhough@stanford.edu) for asking questions or having him look at rough drafts. If you want Bob to comment on a rough draft, turn it in to him at least a week ahead of the due date.