¿

Attendance for Dr. Z.'s MathHistory for Lecture 14 (due no later than 15 minutes after class)

NAME: (print!) Quin Buob

Email to DrZlinear@gmail.com right after class

Subject: p14

with an attachment p14FirstLast.pdf

Part I: List all the "attendance questions" during the lecture, followed by your answers.

Part II:

1. Perform the following permutation-product

$$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 4 & 5 & 7 & 6 & 1 & 2 & 3 \end{pmatrix} \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 3 & 1 & 2 & 6 & 7 & 4 & 5 \end{pmatrix}$$

$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 6 & 7 & 5 & 4 & 3 & 1 & 2 \end{pmatrix}$

2. Let

$$\pi = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 4 & 1 & 2 & 3 \end{pmatrix},$$

find $\pi, \pi^2, \ldots$ until you get the identity permutation.

$\pi^2 = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 3 & 4 & 1 & 2 \end{pmatrix}$

$\pi^3 = \pi \times \pi^2 = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 3 & 4 & 1 \end{pmatrix}$

$\pi^4 = (\pi^2)^2 = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 1 & 2 & 3 & 4 \end{pmatrix}$

3. Express the permutation

$$\pi = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 1 & 2 & 5 & 4 \end{pmatrix},$$

as a product of disjoint cycles. What is the smallest i such that π^i is the identity permutation?

$\begin{bmatrix} 1 & 3 \\ 3 & 2 \end{bmatrix} \begin{bmatrix} 4 & 5 \\ 5 & 4 \end{bmatrix}$

$(132)(45)$

$\pi^2 = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 1 & 4 & 5 \end{bmatrix}$

$\pi^3 = \pi \times \pi^2 = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 \\ 1 & 2 & 3 & 4 & 5 \end{bmatrix}$

$i = 3$

4. Find π^{-1} if

$$\pi = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 1 & 2 & 5 & 4 \end{pmatrix} .$$

$\pi^{-1} = \begin{bmatrix} 3 & 1 & 2 & 5 & 4 \\ 1 & 2 & 3 & 4 & 5 \end{bmatrix}$

$\pi^{-1} = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 1 & 5 & 4 \end{bmatrix}$

Quin Boob
Attendence Quiz

AQ1: Who were the 2 geniuses who proved the impossibility of a general formula for quintic?
Abel and Ruffini

AQ2: Find a way to tile an 8x8 chess board w/ 2x1 dominoes when the board is missing its 2 opposite corners?
This is impossible b/c if the squares are alternating black an white, 1 domino must always cover 1 black square and 1 white square. This means that for this to be possible there must be an equal number of white and black squares. On an 8x8 board any 2 opposite corners will be the same color, lets say black, ~~then~~ when these are removed there will be 32 white squares and only 30 black squares so there is no way to tile this board.

AQ3: At what age did the above geniuses die?
Ruffini died at 56 and Abel died at 26

AQ4: What university did the most in classifying simple groups? What Math department has the most # of faculty members with groups named after them?