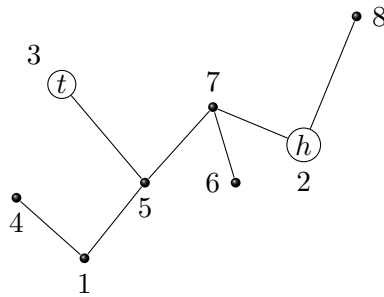Math 113 Group Problems for Monday, Week 9

PROBLEM 1.
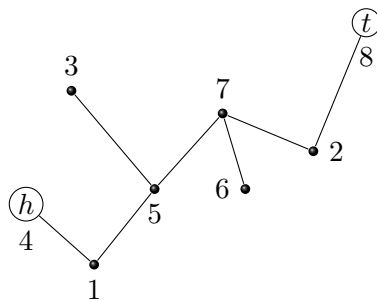
  (a) Find all unlabeled trees with five vertices.

  (b) Use these unlabeled trees to count the number of (labeled) trees with five vertices.

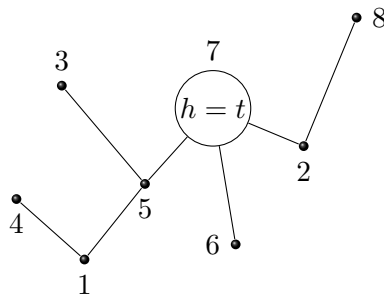PROBLEM 2. Determine the functions $\underline{8} \to \underline{8}$ associated with the following vertebrates:

(a)

(b)

(c)

1

PROBLEM 3. Find the vertebrates associated with the following functions

(a)

i	1	2	3	4	5	6	7	8	9
$f(i)$	4	6	5	2	9	1	7	4	3

(b)

i	1	2	3	4	5	6	7	8	9
$f(i)$	2	3	1	5	6	1	8	8	8

PROBLEM 4. Characterize the vertebrates associated with functions $\underline{n} \to \underline{n}$ which are permutations (i.e., bijective).