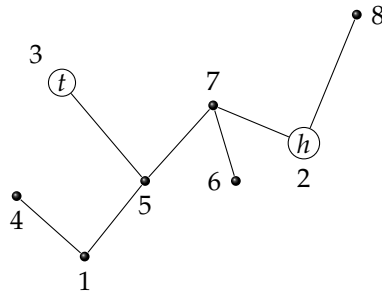


PROBLEM 1.

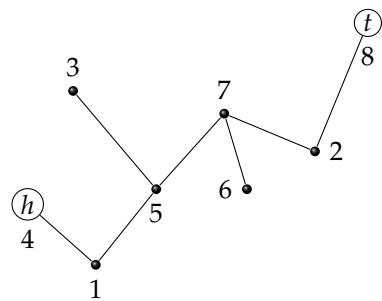
- (i) Find the three unlabeled trees with five vertices.
- (ii) Use these unlabeled trees to count the number of (labeled) trees with five vertices.

PROBLEM 2. Determine the functions  $[8] \rightarrow [8]$  associated with the following vertebrates:

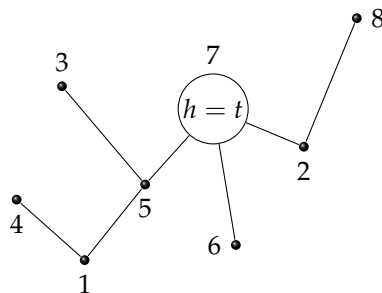
(i)



(ii)



(iii)



PROBLEM 3. Find the vertebrates associated with the following functions

(i)

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

(ii)

$i$	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  $[n] \rightarrow [n]$  which are permutations (i.e., bijective).