

Math 574 Exam 4 1987
Name _____

There are 10 problems each worth 10 points on E
Make your reasoning clear.

① Apply Quick sort to 53861724. How many comparisons did you make?

② Solve the recurrence relation $a_0 = 5, a_k = 3a_{k-1}$

For problems 3 and 4, Does there exist a tree as described? If your answer is yes, draw as many non-isomorphic trees which meet these conditions. Possible, If your answer is no, then explain why.

③ Does there exist a tree with 9 vertices such that 2 vertices have degree 4 and 1 vertex has degree 2? (see above instructions.)

④ Does there exist a tree with 11 vertices such that 6 of the vertices have degree 3? (see above instructions.)

⑤ Solve the recurrence relation $a_n = 15a_{n-1} - 44a_{n-2}$,
 $a_0 = 0, a_1 = 7$.

⑥ Solve the recurrence relation $a_n = a_{n-1} + a_{n-2} - a_{n-3}$,
 $a_0 = -9, a_1 = -8, a_2 = -3$.