

CSE 101
Fall 2020
Quiz 3

Solutions

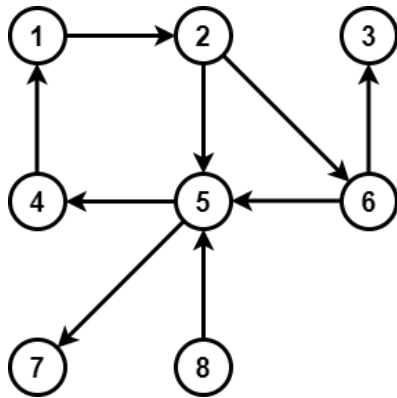
1. (25 Points) Rank the following functions from lowest to highest asymptotic growth rate.

- 1) n
- 2) $n\sqrt{n}$
- 3) e^n
- 4) $\sqrt{n}$
- 5) $n \ln(n)$
- 6) n^2
- 7) $\ln(n)$

Write your answer as a permutation of the set $\{1, 2, 3, 4, 5, 6, 7\}$, giving the corresponding line numbers of the above functions in the required order (left to right, slowest growing function to fastest growing function.) No justifications are required.

Solution: 7 4 1 5 2 6 3

2. (25 Points) Run the [DFS algorithm](#) on the digraph pictured below. Process vertices in the main loop of DFS() by increasing vertex label. In function Visit(), process vertices in adjacency lists by increasing vertex label. Fill in the table below giving the adjacency list representation, discover times, finish times and parents in the DFS forest. Draw the resulting DFS forest



vertex	adj	discover	finish	parent
1	2	1	14	nil
2	5 6	2	13	1
3		10	11	6
4	1	4	5	5
5	4 7	3	8	2
6	3 5	9	12	2
7		6	7	5
8	5	15	16	nil

DFS Forest:

