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| **GE 2318 Homework #1 2024**  **Name: Student ID:**  **Q 1:** Consider the following network:    Calculate:  (1) Average degree of the whole network:  (2) Average path-length of the whole network:  **Q 2:** Consider the generation of a scale-free network, starting initially from the network shown in Q1. Now, suppose that a new node comes in.  (1) What is the probability that the new node will connect to Node 0?  (2) Assuming that the above new node is indeed connected to Node 0, but not any other node. Now, another new node comes in. What is the probability that the second new node will connect to Node 5?  **Q 3:** Compare “Small-World Networks” and “Scale-Free Networks”   |  |  | | --- | --- | | **Similarities** | **Differences** | | **1.**  **2.**  **3.** | |  |  |  | | --- | --- | --- | |  | **Small-World Networks** | **Scale-Free Networks** | | **1.** |  |  | | **2.** |  |  | | **3.** |  |  | | |