SEQUENCES, SERIES AND POWER SERIES

1. What are power series?

2. Give at least three examples of power series

3. State three areas of application of power series in engineering

4. Mention three conditions why some series are not power series

5. Derive from the first principle the power series of

6. Prove that the sequence with the nth

a. Is monotonic increasing

b. has a limit

c. is bounded above

d. is bounded below

e. is bounded

7. Prove that

a.exists for the recursion formula given that

b. Find this limit

8. Show that and that the series is valid for all values of x

9. Deduce the power series of

10. Show that if x is small,

11. Prove that the sequence with the nth term is monotonic increasing, bounded and thus has a limit

12. Use an appropriate test for monotonicity to determine if the sequences below increase or decrease

a.

b.

13. Determine if the given sequences converge or diverge; If it converges, then find their limits

a.

b.

c.

14. Given the Maclaurin series of a function

15. Determine whether the sequence converges of diverges

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16. Determine whether the following series converges or diverges

17. The sequence -1, -1, -1, 1, the following are true of the sequence

a. Not monotonic

b. Bondend only

c. Not monotonic but bonded only

d. All of these

18. Given the sequence , . Is it increasing or decreasing?

19.

20. Use the definition to find the Maclaurin series for the function

21. What dows this equation mean in power series

a. Power series converges

b. Power series diverges

c. None of the above

d. All of these

22. Test for convergence

23. Test for the absolute or conditional convergence

24. Test for absolute or conditional convergence

25. Find the domain of the convergence of the series

BOOLEAN ALGEBRA AND LOGIC GATES