

Answers to Sample Exam 3

1.) e

2.) b

3.) c

4.) c

5.) e

6.) c

7.) b

8.) b

9.) d

10.) a

11.) a

12.) a,c,e

13.) b

14.) Diverges by Limit Comparison Test.

15.) Diverges by Test for Divergence.

16.) Radius of Convergence: 2; Interval of Convergence: $(1, 5]$.

$$17.) \sum_{n=0}^{\infty} 2(-1)^n x^{2n+1}.$$

$$18.) \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} (x-1)^n$$

$$19.) T_2(x) = 2 + \frac{1}{4}(x-4) - \frac{1}{64}(x-4)^2. |R_2(x)| \leq \frac{\sqrt{3}}{250}$$

20.) The series diverges by the Comparison Test.

$$21.) s_3 = \sum_{n=0}^3 \frac{(-1)^n}{n!(2n+1)} = \frac{26}{35}$$

22.) The series converges by the Integral Test. The sum of the first 5 terms is

$$s_6 = \sum_{n=2}^7 \frac{1}{n(\ln n)^3} = \frac{1}{2(\ln 2)^3} + \frac{1}{3(\ln 2)^3} + \dots + \frac{1}{6(\ln 6)^3}. \text{ Now an upper bound on the remainder is } R_6 \leq \frac{1}{2(\ln 6)^2}.$$