

Calculus -2

Review for Test-3

Name _____

Find the sum of the series.

$$1) \sum_{n=0}^{\infty} (-1)^n \frac{7}{3^n}$$

Determine if the series converges or diverges. If the series converges, find its sum.

$$2) \sum_{n=1}^{\infty} \frac{7}{(4n-1)(4n+3)}$$

$$3) \sum_{n=1}^{\infty} \frac{2}{n(n+1)(n+2)}$$

Determine if the series converges or diverges; if the series converges, find its sum.

$$4) \sum_{n=1}^{\infty} \ln \frac{4}{n}$$

$$5) \sum_{n=1}^{\infty} \frac{2n+1}{5n-1}$$

Find the series' radius of convergence.

$$6) \sum_{n=0}^{\infty} \frac{(x-5)^n}{n^3 3^n}$$

Find the Taylor series generated by f at $x = a$.

$$7) f(x) = \frac{1}{x^2}, a = 8$$

$$8) f(x) = 4^x, a = 10$$

Find the Maclaurin series for the given function.

$$9) e^{-7x}$$

Use the integral test to determine whether the series converges.

$$10) \sum_{n=1}^{\infty} \frac{1}{8^n}$$

Determine if the series converges absolutely, converges, or diverges.

$$11) \sum_{n=1}^{\infty} \frac{(-8)^n}{9n^2 + 6^n}$$

Find the interval of convergence of the series.

$$12) \sum_{n=0}^{\infty} (x - 9)^n$$

Find the series' radius of convergence.

$$13) \sum_{n=0}^{\infty} \frac{(x - 9)^n}{n^2 3^n}$$

For what values of x does the series converge absolutely?

$$14) \sum_{n=0}^{\infty} (-1)^n (6x + 4)^n$$

Use the integral test to determine whether the series converges.

$$15) \sum_{n=1}^{\infty} \frac{8}{e^x - 1}$$

Determine if the series converges absolutely, converges, or diverges.

$$16) \sum_{n=1}^{\infty} \frac{(-1)^n}{9n^{1/4} + 1}$$

Use the Comparison Test to determine if the series converges or diverges.

$$17) \sum_{n=1}^{\infty} \frac{\sin n \cos n}{7^n}$$

$$18) \sum_{n=1}^{\infty} \frac{e^{-3n^2}}{n^2}$$

For what values of x does the series converge conditionally?

$$19) \sum_{n=1}^{\infty} \frac{(-1)^n (x + 4)^n}{n}$$

Find the Taylor series generated by f at $x = a$.

$$20) f(x) = \frac{1}{6 - x}, a = 4$$

Find the Maclaurin series for the given function.

$$21) \cos 2x$$

Answer Key

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1) $\frac{21}{4}$

2) converges; $\frac{7}{12}$

3) converges; $\frac{1}{2}$

4) Diverges

5) Converges; $\frac{20}{3}$

6) 3

7) $\sum_{n=0}^{\infty} \frac{(-1)^n (n+1)(x-8)^n}{8^{n+2}}$

8) $\sum_{n=0}^{\infty} \frac{4^{10} (\ln 4)^n (x-10)^n}{n!}$

9) $\sum_{n=0}^{\infty} \frac{(-1)^n 7^n x^n}{n!}$

10) converges

11) Diverges

12) $8 < x < 10$

13) 3

14) $-\frac{5}{6} < x < -\frac{1}{2}$

15) converges

16) Converges conditionally

17) converges

18) converges

19) $x = -3$

20) $\sum_{n=0}^{\infty} \frac{(x-4)^n}{2^{n+1}}$

21) $\sum_{n=0}^{\infty} \frac{(-1)^n 2^{2n} x^{2n}}{(2n)!}$