QUIZ TODAY—Review Problems

1. Find the radius of convergence of the power

(b) 2

(c) ∞

(d) 0

(e) none of these

2. Find the radius of convergence $\sum_{n=1}^{\infty} \frac{2 \cdot 5 \cdot 8 \dots (3n-1)}{3 \cdot 7 \cdot 11 \dots (4n-1)} x^{n}.$

$$R = \frac{4}{3}$$

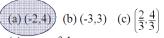
3.Determine the interval of convergence of the series $\sum_{n=1}^{\infty} \frac{(x+2)^n}{n3^n}.$

$$[-5,1)$$

4. For what values of x does the series $\sum_{n=0}^{\infty} \frac{2^n (x-4)^n}{n}$ converge?

$$\left[\frac{7}{2},\frac{9}{2}\right)$$

5. Find the interval of convergence of the power series: $\sum_{n=0}^{\infty} \frac{1}{3^n} (x-1)^n$.



(d)(2,4)

(e) none of these

6. Find the interval of convergence of the power series: $\sum_{n=0}^{\infty} \frac{1}{9n} (x-3)^n.$

(a) (-9.9) (b) $\left[\frac{26}{9}, \frac{28}{9}\right]$

(c)(6,12)

(e) none of these

7. Find the interval of convergence of the power series: $\sum_{n=0}^{\infty} \frac{1}{6^n} (x+5)^n.$ (a) $\left(-\frac{31}{6}, -\frac{29}{6}\right)$ (b) (-11,1)

(c)(-6,6)

(d)(1,11)

(e) none of these

8. Given $f(x) = \sum_{n=0}^{\infty} \frac{3x^n}{n!}$, find a power series for f'(x).

$$\sum_{n=0}^{\infty} \frac{3x^n}{n!}$$

9. Given $f(x) = \sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)!}$, find a power series for f'(x).

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

10. Find the interval of convergence of the power series: $\sum_{n=1}^{\infty} \frac{(-1)^n}{n} (x-3)^{n-1}.$

(a)(-1,1)(d)[2,4]

(b) (-1,1] (c) (2,4) (e) none of these

11. Find the interval of convergence of the power series: $\sum_{n=1}^{\infty} \frac{(x+4)^n}{n \cdot 2^n}.$

[-6, -2)

12. Find the interval of convergence of the power series: $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}(x-3)^n}{n3^n}.$

(0,6]

- 13. Consider the series $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}(x-1)^n}{\sqrt{n}}$.
 - a. Find the value of x at which the series is centered.
 - b.Find the radius of convergence.
 - x = 1c. Find the interval of convergence.

R = 1

(0,2]

14. Let f be the function

 $f(x) = \frac{1}{1+x} = \sum_{n=0}^{\infty} (-1)^n x^n$. Find the series and

the interval of convergence for each of the following:

(a) f(x) (b) f'(x) (c) $\int f(x)dx$

(b) $\sum_{n=1}^{\infty} (-1)^n n x^{n-1} \qquad C + \sum_{n=0}^{\infty} \frac{(-1)^n x^{n+1}}{n+1}$ series is given (-1,1)

(-1,1](-1,1)

15. Let f be the function $f(x) = \sum_{n=1}^{\infty} \frac{(-1)^n (x-2)^n}{n}$. Find the interval of

convergence of f(x)dx.

- (a) (1,3) (b) (1,3] (c) [1,3)(e) none of these
- ((d)[1,3]

16. Let f be the function $f(x) = \sum_{n=0}^{\infty} (-1)^n \left(\frac{x}{3}\right)^n$.

Find the series and the interval of convergence for $\int f(x)dx$.

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

(-3,3]