

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Power Series Radius and Interval of Convergence

Find the radius first, then test the left and right endpoints separately. Recheck endpoint behavior after termwise differentiation or integration.

1. Use $\sum_{n=1}^{\infty} \frac{2}{(6^n n^3)}(x-0)^n$. Find the radius and interval of convergence of the resulting series. Show separate checks at $x=-6$ and $x=6$.

2. Use $\sum_{n=1}^{\infty} \frac{4}{(3^n n^4)}(x+3)^n$. Find the radius and interval of convergence of the resulting series. Show separate checks at $x=-6$ and $x=0$.

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Power Series Radius and Interval of Convergence

Find the radius first, then test the left and right endpoints separately. Recheck endpoint behavior after termwise differentiation or integration.

3. Integrate $\sum_{n=1}^{\infty} \frac{5}{2^n n^1} (x+3)^n$ term by term with constant $C=0$ to obtain $\sum_{n=1}^{\infty} \frac{5(x+3)^{n+1}}{[2^n n^1(n+1)]}$. Find the radius and interval of convergence of the resulting series. Show separate checks at $x=-5$ and $x=-1$.

4. Use $\sum_{n=1}^{\infty} \frac{4}{6^n} (x-1)^n$. Find the radius and interval of convergence of the resulting series. Show separate checks at $x=-5$ and $x=7$.

Power Series Radius and Interval of Convergence

Find the radius first, then test the left and right endpoints separately. Recheck endpoint behavior after termwise differentiation or integration.

5. Differentiate $\sum_{n=1}^{\infty} \frac{5}{7^n n^2} (x-2)^n$ term by term to obtain $\sum_{n=1}^{\infty} \frac{5n(x-2)^{n-1}}{7^n n^2}$. Find the radius and interval of convergence of the resulting series. Show separate checks at $x=-5$ and $x=9$.

6. Integrate $\sum_{n=1}^{\infty} \frac{4n^{1/7}}{7^n} (x-0)^n$ term by term with constant $C=0$ to obtain $\sum_{n=1}^{\infty} \frac{4(x-0)^{n+1}}{7^n n^{1/7} (n+1)}$. Find the radius and interval of convergence of the resulting series. Show separate checks at $x=-7$ and $x=7$.
