

Solutions to Week in Review 9

1. a.) $I = \left[-\frac{1}{4}, \frac{1}{4}\right], R = \frac{1}{4}$

b.) $I = \left(\frac{1}{6}, \frac{1}{2}\right], R = \frac{1}{6}$

c.) $I = \{-2\}, R = 0$

d.) $I = (-\infty, \infty), R = \infty$

e.) $I = (-1, 3], R = 2$

2.

a.) Diverge

b.) Converge

c.) Converge

d.) Not enough information to determine.

3. a.) $\sum_{n=0}^{\infty} 8^n x^n, R = \frac{1}{8}$

b.) $\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n}}{2^{n+1}}, R = \sqrt{2}$

c.) $\sum_{n=0}^{\infty} \frac{x^{n+4}}{5^{n+4}}, R = 5$

d.) $f(x) = \ln(x + 15) = \ln 15 + \sum_{n=0}^{\infty} \frac{(-1)^n x^{n+1}}{15^{n+1}(n+1)}, R = 15$

$g(x) = x^2 \ln(x + 15) = x^2 \ln 15 + \sum_{n=0}^{\infty} \frac{(-1)^n x^{n+3}}{15^{n+1}(n+1)}, R = 15$

e.) $\sum_{n=0}^{\infty} \frac{(-1)^n (2x)^{2n+1}}{(2n+1)}, R = \frac{1}{2}$

f.) $\sum_{n=0}^{\infty} 2^n (n+1) x^n, R = \frac{1}{2}$

4. $\sum_{n=0}^{\infty} \frac{(-1)^n}{2^{5n+1}(5n+1)}$

5. $\frac{1}{10}$