

Find the radius and interval of convergence of the following power series:

1. $\sum_{k=1}^{\infty} \frac{1}{k} (x+2)^k$

2. $\sum_{n=1}^{\infty} \frac{1}{2^n} x^n$

3. $f(x) = 1 + x + 4x^2 + 9x^3 + 16x^4 \dots$

4. $\sum_{k=0}^{\infty} \frac{1}{k+2} x^k$

5. $\sum_{k=0}^{\infty} (-1)^k \frac{1}{(2k+1)!} x^{2k+1}$

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

7. $\sum_{k=0}^{\infty} \frac{3^k}{2k} x^k$

8. $\sum_{k=0}^{\infty} (-1)^{k+1} \frac{1}{k2^k} (x-3)^k$