

Find the interval of convergence for the following series:

1.
$$\sum_{k=1}^{\infty} \frac{x^k}{k2^k}$$

2.
$$\sum_{n=0}^{\infty} \frac{2^n x^n}{n!}$$

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