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

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