

1. Find the interval of convergence for $P(x) = \sum_{k=0}^{\infty} (k+1)(x-3)^k$
2. Determine if each series diverges, converges conditionally, or converges absolutely.

(a)
$$\sum_{k=0}^{\infty} \frac{1}{(k!)^2}$$

(b)
$$\sum_{m=2}^{\infty} me^{-m^2}$$

(c)
$$\sum_{t=7}^{\infty} (-1)^t \sin\left(\frac{1}{t}\right)$$