

1. For each of the following power series, find the interval of convergence and the radius of convergence of the series.

(a)  $\sum_{n=0}^{\infty} x^n$

Interval of Convergence: \_\_\_\_\_

Radius of Convergence: \_\_\_\_\_

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

Interval of Convergence: \_\_\_\_\_

Radius of Convergence: \_\_\_\_\_

(c)  $\sum_{n=1}^{\infty} \frac{1}{n} x^n$

Interval of Convergence: \_\_\_\_\_

Radius of Convergence: \_\_\_\_\_

$$(d) \sum_{n=1}^{\infty} \frac{10^{n+1}}{3^{2n}} x^n$$

Interval of Convergence: \_\_\_\_\_

Radius of Convergence: \_\_\_\_\_

$$(e) \sum_{n=0}^{\infty} \frac{n}{7^n} x^n$$

Interval of Convergence: \_\_\_\_\_

Radius of Convergence: \_\_\_\_\_

$$(f) \sum_{n=1}^{\infty} \frac{1}{n} (2x - 3)^n$$

Interval of Convergence: \_\_\_\_\_

Radius of Convergence: \_\_\_\_\_

$$(g) \sum_{n=1}^{\infty} \frac{1}{n \ln n} (x-7)^n$$

Interval of Convergence: \_\_\_\_\_

Radius of Convergence: \_\_\_\_\_

$$(h) \sum_{n=1}^{\infty} \frac{1}{2^n} (x - \sqrt{2})^{n+1}$$

Interval of Convergence: \_\_\_\_\_

Radius of Convergence: \_\_\_\_\_

$$(i) \sum_{n=1}^{\infty} \frac{1}{n^{\frac{3}{2}}} (4x - 5)^{2n+1}$$

Interval of Convergence: \_\_\_\_\_

Radius of Convergence: \_\_\_\_\_

2. Find a power series whose interval of convergence is  $[6, 10)$