

SECTION 5.6: RATIO AND ROOT TESTS

(1) Recall the Ratio Test

(2) Use the Ratio Test to determine if the series $\sum_{n=1}^{\infty} \frac{(2n)!}{(n!)^2}$ converges or diverges, or explain why the test fails.

(3) The Root Test

(4) Use the Root Test on each series below to determine if it converges or diverges.

(a)
$$\sum_{n=1}^{\infty} \frac{(n+1)^{2n}}{(5n^2+n)^n}$$

(b)
$$\sum_{n=1}^{\infty} \frac{n^2}{2^n}$$

(5) Find the values of x for which the series $\sum_{k=1}^{\infty} \frac{x^k}{k^4}$ converges. Explain your answer.