

## Cálculo 2 - Lista 6

### Série de potências

Determine o intervalo de convergência das séries de potências

1.  $\sum_{n=1}^{\infty} \frac{1}{n^2} x^n$
2.  $\sum_{n=1}^{\infty} \frac{1}{\sqrt{n} 3^n} x^n$
3.  $\sum_{n=0}^{\infty} \frac{(-1)^n}{n+1} x^{2n}$
4.  $\sum_{n=1}^{\infty} \frac{(-1)^n}{2n-1} x^{n+1}$
5.  $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^n} x^n$
6.  $\sum_{n=0}^{\infty} \frac{n!}{(2n)!} x^n$
7.  $\sum_{n=1}^{\infty} \frac{2^n}{n 3^{n+2}} x^{n+1}$
8.  $\sum_{n=2}^{\infty} (\ln n) x^n$
9.  $\sum_{n=2}^{\infty} \frac{\ln n}{n^2} x^n$
10.  $\sum_{n=0}^{\infty} x^{n^2}$
11.  $\sum_{n=0}^{\infty} 2^n x^n$
12.  $\sum_{n=0}^{\infty} \frac{n}{4^n} x^n$
13.  $\sum_{n=1}^{\infty} \frac{2}{3^{n+1} n^2} x^n$
14.  $\sum_{n=1}^{\infty} \frac{n-1}{n^{2n}} x^n$
15.  $\sum_{n=1}^{\infty} \frac{2^n}{n^n} x^n$
16.  $\sum_{n=0}^{\infty} \frac{4^{n+1}}{\pi^{n+2}} x^{n+3}$
17.  $\sum_{n=3}^{\infty} \frac{1}{n^3-4} x^n$
18.  $\sum_{n=2}^{\infty} \frac{\ln n}{n} x^n$
19.  $\sum_{n=2}^{\infty} \frac{1}{\ln n} x^n$

20.  $\sum_{n=1}^{\infty} x^{n!}$
21.  $\sum_{n=1}^{\infty} \frac{n!}{n^n} x^n$
22.  $\sum_{n=1}^{\infty} n! x^n$
23.  $\sum_{n=1}^{\infty} \frac{x^{n^2}}{2^{n-1} n^n}$
24.  $\sum_{n=1}^{\infty} \frac{x^{n^n}}{n^n} I = [-1, 1]$
25.  $\sum_{n=1}^{\infty} \left(\frac{n}{2n+1}\right)^{2n-1} x^n$

### Respostas

1.  $I = [-1, 1]$
2.  $I = [-3, 3)$
3.  $I = [-1, 1]$
4.  $I = (-1, 1]$
5.  $I = (-\infty, \infty)$
6.  $I = (-\infty, \infty)$
7.  $I = [-3/2, 3/2)$
8.  $I = (-1, 1)$
9.  $I = [-1, 1]$
10.  $I = (-1, 1)$
11.  $I = (-1/2, 1/2)$
12.  $I = (-4, 4)$
13.  $I = [-3, 3]$
14.  $I = (-\infty, \infty)$
15.  $I = (-\infty, \infty)$
16.  $I = (-\pi/4, \pi/4)$
17.  $I = [-1, 1]$
18.  $I = [-1, 1)$
19.  $I = [-1, 1)$
20.  $I = (-1, 1)$
21.  $I = (-e, e)$

22.  $I = (-1, 1)$

23.  $I = [-1, 1]$

24.  $I = [-1, 1]$

25.  $I = (-4, 4)$