Rady funkci - mocninne rady

9.Vysetrete konvergenci rady

$$\sum_{n=1}^{\infty} \log(x)^n, 0 < x$$

Pouzijeme D'Alambertova podiloveho kriteria

```
> limit(abs((log(x)^(n+1))/log(x)^n),n=infinity);
```

$$\lim_{n \to \infty} \left| \frac{\ln(x)^{(n+1)}}{\ln(x)^n} \right|$$

```
> limit((log(x)^(n+1))/log(x)^n,n=infinity);
```

$$\ln(x)$$

Spojenim techto dvou vypoctu dostavame podminku $|\ln(x)| < 1$

Pro x=$\mathbf{e}^{(-1)}$

ma rada tvar $\sum_{n=1}^{\infty} \ln(\mathbf{e}^{(-1)})^n$

a jak vime, tato rada diverguje.

Pro x=e ma rada tvar $\sum_{n=1}^{\infty} \ln(\exp)^n$

a take diverguje. Tedy dana rada konverguje pro x z intervalu (1/e,e).

10. Stanovte polomer konvergence a soucer rady

$$\sum_{n=0}^{\infty} \frac{n z^n}{5^n}$$

```
> limit((n*5^(n+1))/((n+1)*5^n),n=infinity);
```

$$5$$

Polomer konvergence je 5 a soucet:

```
> sum((n*z^n)/5^n,n=0..infinity);
```

$$\frac{5 z}{(z-5)^2}$$

Jak je to s Mapplem snadne :)

```
>
```