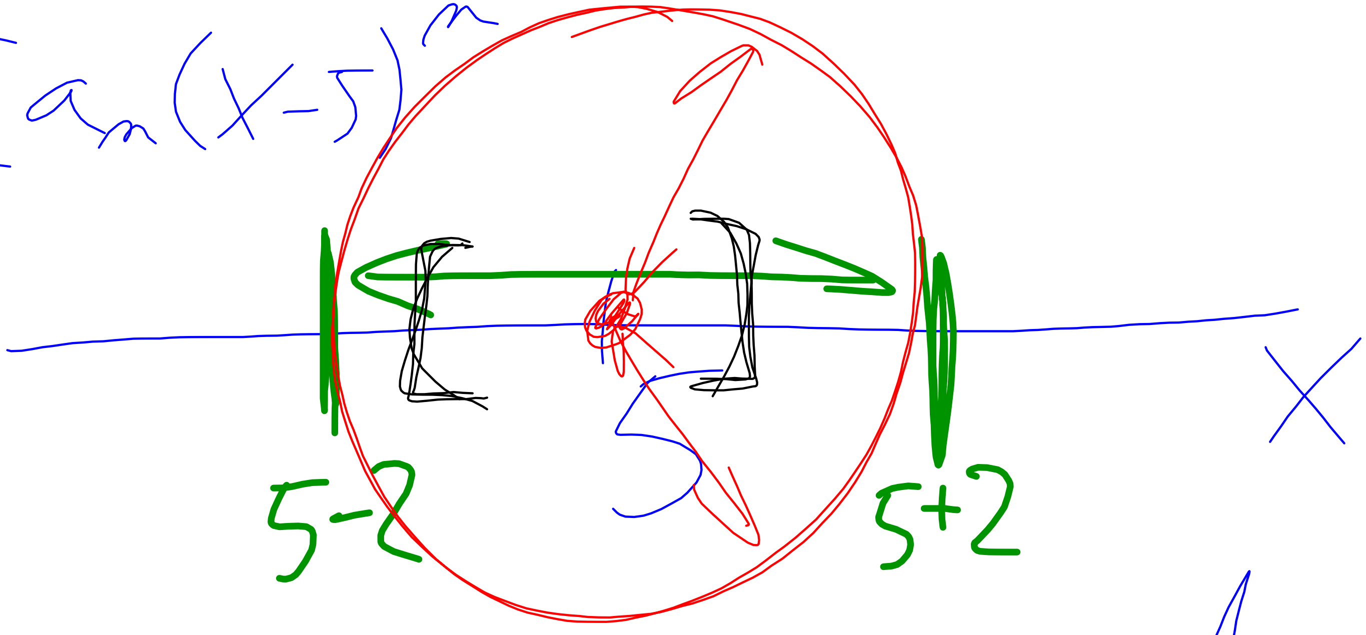
$$\sum a_n (x-5)^n$$



$$a = \frac{1}{2} \Rightarrow R = 2$$

$$a \cdot |x| \leq 1$$

$$\boxed{|x| \leq \frac{1}{a}}$$

$(-1, 1)$

$$\sum \frac{(x-\pi)^n}{n}, \quad x_0 = \pi$$

$$\left[\pi - 1, \pi + 1\right)$$

$$a_n = \frac{(-1)^n}{n}$$

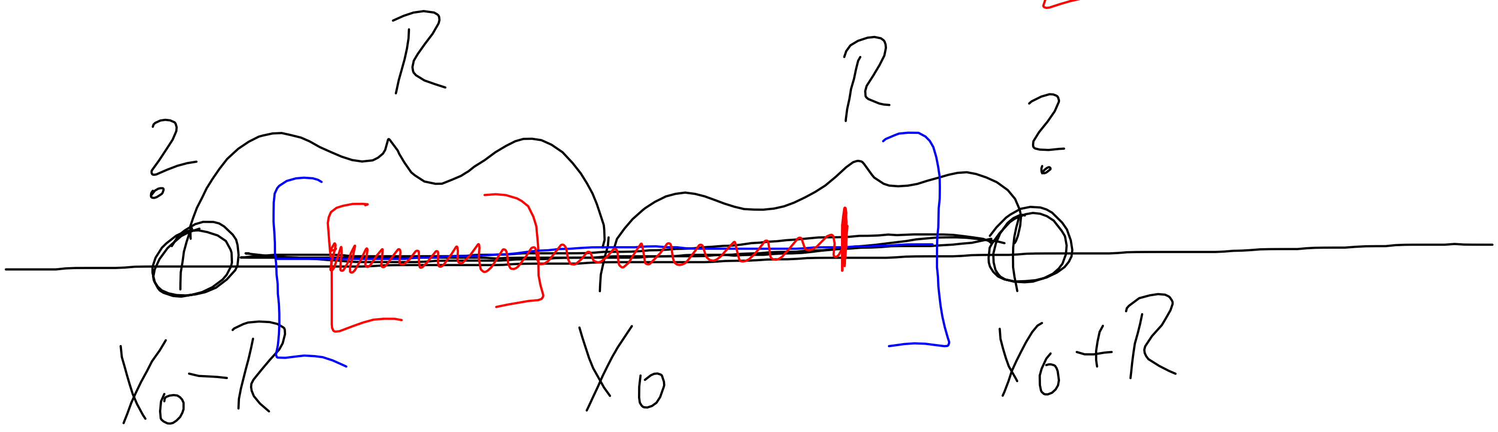
$$\left| \frac{\frac{1}{n+1}}{\frac{1}{n}} \right| \longrightarrow 1 \Rightarrow R = \frac{1}{1}$$

$$\lim \left| \frac{a_{n+1}}{a_n} \right| = a = \lim \frac{(n+1)!}{n!}$$

$$= \lim n$$

$$R = \lim \left| \frac{a_n}{a_{n+1}} \right|$$

$$[x_0 - r, x_0 + r]$$



$$\sum f_n(x) \qquad \sum \frac{n}{n!}$$

$$= F(x)$$

$$\sum n \cdot x^{n-1} = \sum \left[n \cdot \left(\int x^{n-1} dx \right)' \right] =$$

$$= \sum \left(n \cdot \int x^{n-1} dx \right)' = \left(\sum n \cdot \int x^{n-1} dx \right)' =$$

$$= \left(\sum \cancel{n} \cdot \frac{x^n}{\cancel{n}} \right)' = \left(\sum x^n \right)'$$

$$\sum_{n=0}^{\infty} x^n = \frac{1}{1-x} \quad \Big| \frac{d}{dx} \qquad \sum_{n=1}^{\infty} n \cdot x^n$$

$$\sum_{n=0}^{\infty} n \cdot x^{n-1} = \left(\frac{1}{1-x}\right)' \quad \Big| \cdot x$$

$$\sum_{n=0}^{\infty} n \cdot x^n = \left(\frac{1}{1-x}\right)' \cdot x = \ldots = \sum_{n=1}^{\infty} n \cdot x^n$$

$$\sum_{1}^{\infty} \frac{1}{2^n} = \sum_{1}^{\infty} \left(\frac{1}{2}\right)^n = \frac{\frac{1}{2}}{1-\frac{1}{2}} = \underline{\underline{1}}$$

$$
\begin{array}{c|ccccc}
 & \frac{1}{2} & \frac{1}{2^2} & \frac{1}{2^3} & \frac{1}{2^4} & \cdots \\
\hline
\frac{1}{2} & \frac{1}{2^2} & \frac{1}{2^3} & \frac{1}{2^4} & \frac{1}{2^5} & \cdots \\
\frac{1}{2^2} & \frac{2}{2^3} & \frac{1}{2^4} & \frac{1}{2^5} & \frac{1}{2^6} & \cdots \\
\frac{1}{2^3} & \frac{1}{2^4} & \frac{1}{2^5} & \frac{1}{2^6} & \frac{1}{2^7} & \cdots \\
\vdots & \vdots & \vdots & \vdots & \vdots &
\end{array}
$$

$$n \cdot 2^n \rightsquigarrow n \cdot x^n$$

$$\frac{1}{n \cdot 2^n} \rightsquigarrow \frac{x^n}{n}$$