February 27

How is the Langrange Error Bound similar to the terms in a Taylor polynomial?

$$\frac{f^{(n+1)}(z)}{(n+1)!}x^{n+1}$$

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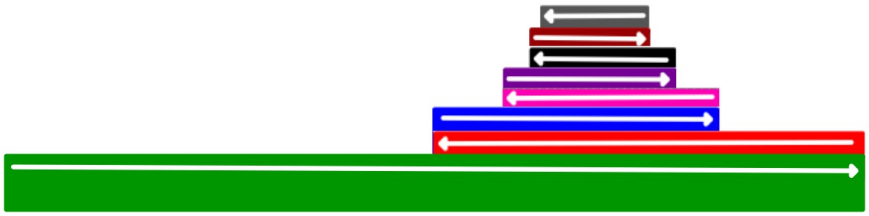
Students will verbally explain how to find the error in an alternating series

(using the words:
derivative, next term, over/under...)

Alternating Harmonic Series



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

$$\text{error} \leq \left| \frac{(-1)^7}{6} \right| = \frac{1}{6}$$

Error in Alternating Series

$$\text{error} \leq |a_{n+1}|$$

The error for the n^{th} partial sum is less than the $n^{th}+1$ term

$$\sum_{n=0}^{\infty} (-1)^{n+1} \left(\frac{1}{n+2}\right)$$

Find the error if the 50^{th} partial sum is used to approximate the sum

$n = 50$

$$\text{error} \leq \left| (-1)^{51+1} \left(\frac{1}{51+2}\right) \right|$$

$$\text{error} \leq \frac{1}{53}$$

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

find the error of S_{10}

$n = 10$

$\text{error} \leq \left| \frac{(-1)^{11} 5}{11^2-3} \right|$

$\text{error} \leq \frac{5}{118}$