

WHY IS THE ERROR R_3

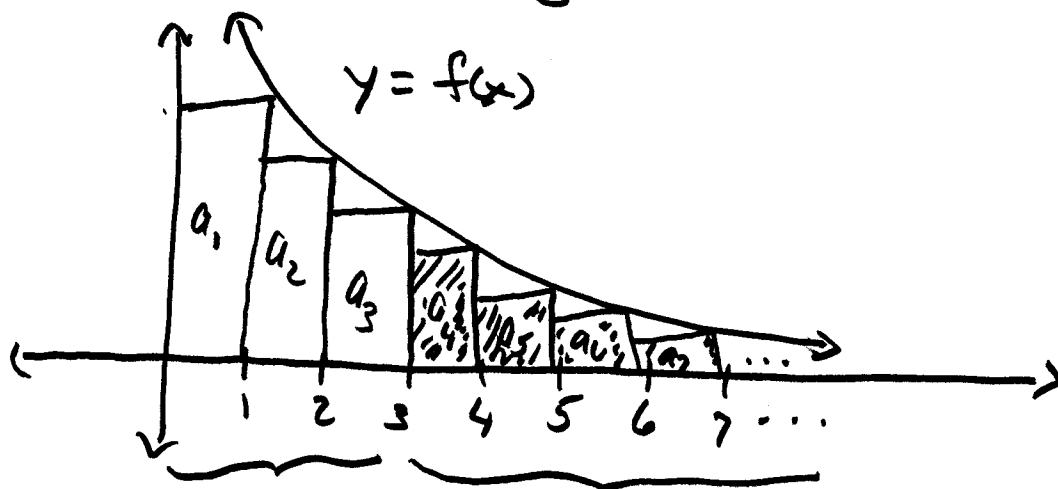
Less than or Equal to $\int_3^{\infty} f(x) dx$?

When the Integral Test applies to the series $\sum_{j=1}^{\infty} a_j$, The error in $S_n \approx S$ is $R_n = a_{n+1} + a_{n+2} + \dots$

and the Level of ERROR is $\int_n^{\infty} f(x) dx$ because

$$R_n \leq \int_n^{\infty} f(x) dx.$$

Why is $R_3 \leq \int_3^{\infty} f(x) dx$?



$$S_3 = a_1 + a_2 + a_3 \quad R_3 = a_4 + a_5 + a_6 + a_7 + \dots$$

$R_3 = \text{THE ERROR in } S_3 \approx S.$

$R_3 = \text{Sum of Areas of Shaded Rectangles} \leq \int_3^{\infty} f(x) dx = \text{The Area Under the Curve.}$