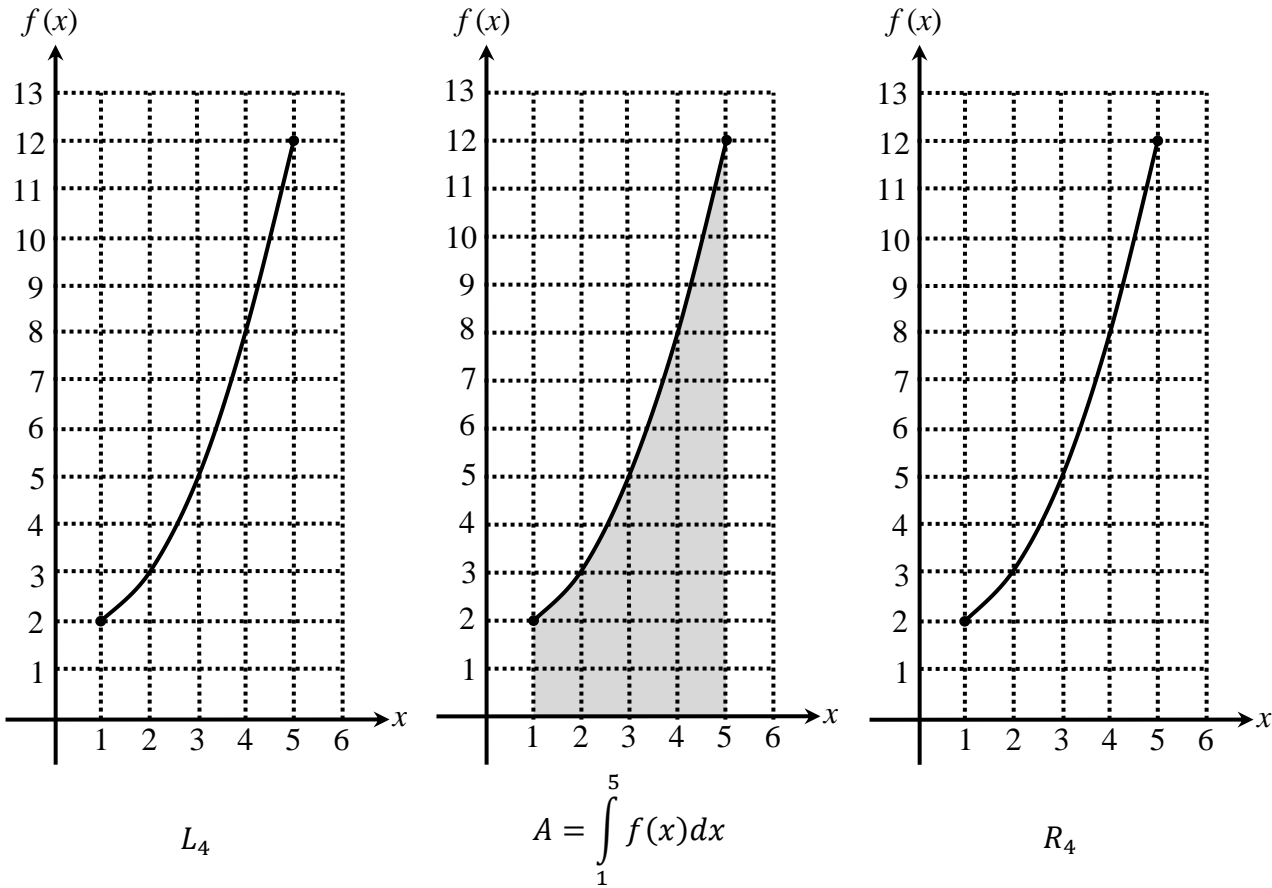


**Class Drill 13: Estimating the Area Under a Graph Using Riemann Sums.**

The goal is to estimate the shaded area in the middle figure. You will do this by finding the values of the Riemann sums  $L_4$  and  $R_4$ . This will give you lower and upper bounds for the shaded area.



(A) Draw in the rectangles for the left sum  $L_4$ .

(B) Find the value of  $L_4$ .

(C) Draw in the rectangles for the right sum  $R_4$ .

(D) Find the value of  $R_4$ .

(E) In the expression  $L_4 \leq \int_1^5 f(x) dx \leq R_4$ , replace the symbols  $L_4$  and  $R_4$  with the values from questions (B) and (D).

$$\underline{\hspace{2cm}} \leq \int_1^5 f(x) dx \leq \underline{\hspace{2cm}}$$