

Anti-Derivatives

Example

1. Find an antiderivative of $\frac{1}{2x}$.
2. True False Just like differentiation where we can use the chain rule/product rule/quotient rule/etc. to always be able to find the derivative of a function, we can find similar rules to do the same with finding an anti-derivative.
3. True False There exists a unique anti-derivative.

Problems

4. Find an antiderivative of $5e^x$.
5. Find an antiderivative of $x + \sqrt{x}$.
6. Find an antiderivative to $8t^3 + 15t^2$.
7. Find an antiderivative to e .
8. Find an antiderivative to $\cos u$.
9. Find an antiderivative to $\sin(2t)$.

Riemann Sums

Example

10. Using 5 right endpoints, estimate the area under $\frac{1}{x}$ on the interval $[1, 6]$.
11. True False The first derivative can tell you if a right endpoint Riemann sum is an overestimate or underestimate.
12. True False Left and right endpoint are the only kind of Riemann sums.

Problems

13. Using 5 left endpoints, estimate the area under $\frac{1}{x}$ on the interval $[1, 6]$.
14. Using 6 left endpoints, estimate the area under $\frac{1}{x}$ on the interval $[1, 4]$.
15. Using 6 right endpoints, estimate the area under $\frac{1}{x}$ on the interval $[1, 4]$.