

November 18

How do you find
inflection points?



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Students will verbally explain how to
find the exact area under a curve using
definite integrals

(using the words:
right, left, above, below, antiderivative...)



Open the TI-Nspire document *Definite_Integral*.

In this activity, you will use a graphical representation to explore the definite integral of a continuous function. You will change the upper and lower limits, a and b , of the integral $\int_a^b f(x) dx$ and observe the resulting changes in the graph and the value of the definite integral.



Move to page 1.2.

Press **→** and **←** to navigate through the lesson.

- The graph shown is of the function $y = f(x)$. The definite integral of $f(x)$ from a to b is given by $\int_a^b f(x) dx$. For example, $\int_0^2 f(x) dx$ is the definite integral of $f(x)$ from 0 to 2, or between $x = 0$ and $x = 2$.

Drag points a and b along the x -axis to determine the values of the following definite integrals, where f is the function shown in the graph.

- $\int_0^2 f(x) dx =$ _____
- $\int_{-4}^2 f(x) dx =$ _____
- $\int_{-4}^{-2} f(x) dx =$ _____

- Drag point a to -3 and move point b to determine the following:

- For what values of b is $\int_{-3}^b f(x) dx$ positive? What do you observe about the shaded region and the graph of f when $\int_{-3}^b f(x) dx$ is positive?
- For what values of b is $\int_{-3}^b f(x) dx$ negative? What do you observe about the shaded region and the graph of f when $\int_{-3}^b f(x) dx$ is negative?
- For what values of b does $\int_{-3}^b f(x) dx = 0$? What do you observe about the shaded region and the graph of f when $\int_{-3}^b f(x) dx = 0$?

Find a and b such that the value of the definite integral is 2.14