Precalculus 3.2 Key Points

**Summation/Sigma Notation**:

$$\sum_{i=0}^{2} (2i + 3) = [2(0) + 3] + [2(1) + 3] + [2(2) + 3] = 15$$

- The variable below the sigma symbol is called the **index** (i in this case)
- The numbers above & below the sigma symbol set the **upper & lower bounds**, respectively, for the summation (2 and 0 in this case)
- The term to the right of the sigma symbol is called the **argument** ($2i + 3$ in this case)
- **Sequence**: The list of numbers that follows a general rule (such as "3, 5, 7, 9, 11, 13")
- **Series**: The sum of the terms in a sequence of numbers (such as "3 + 5 + 7 + 9 + 11 + 13")

Area Under a Curve:

The area under the curve of a function is the area between the graph of the function and the x-axis over some x-region.
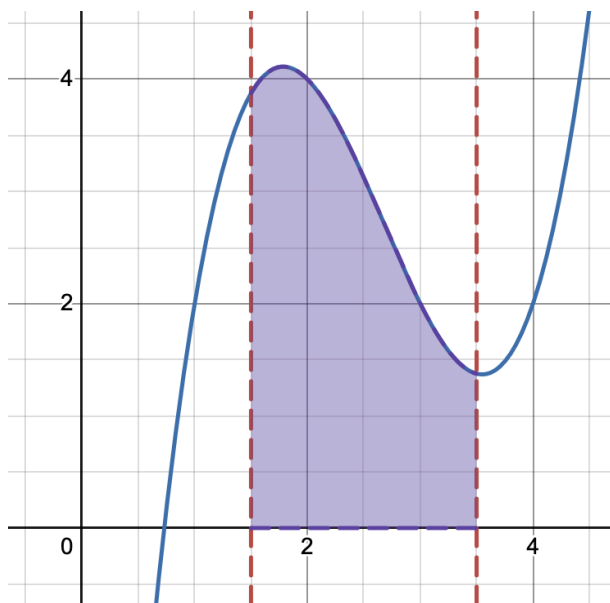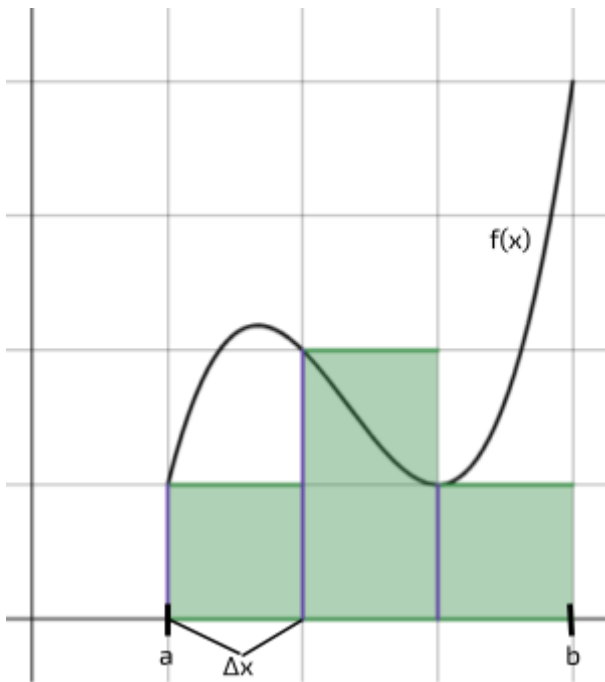
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Left and Right Endpoint Rectangles:

You can use rectangles to approximate the area under the curve. Over the interval which you want to approximate the area under the curve of, divide the interval into subintervals. Use the values of the function to create rectangles and sum up the area of the rectangles.

Left Endpoint:

$$\sum_{i=0}^{n-1} [\Delta x \bullet f(a + \Delta x \bullet i)]$$

Right Endpoint:

$$\sum_{i=1}^{n} [\Delta x \bullet f(a + \Delta x \bullet i)]$$