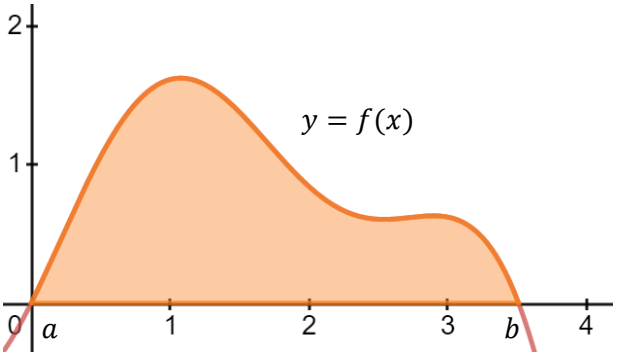
Area Under a Curve Part 1

Goal: • Can define the area under any curve using a Riemann Sum and limit.
Terminology: • Riemann Sum

Discussion question: Why is the area of a circle πr^2

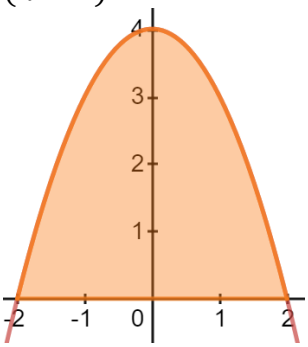
Let's use this idea with an arbitrary shape.



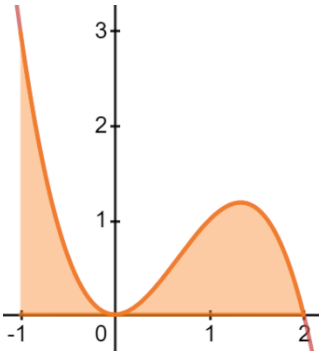
I have built a calculator for you to partition a region into n subintervals

https://www.desmos.com/calculator/t17czhwjyl

Example: Approximate the area under the parabola $f(x) = 4 - x^2$ on the interval $[-2, 2]$ using 4 subintervals $(n = 4)$.



Practice: Determine the area under the curve $f(x) = -x^3 + 2x^2$ on the interval $[-1, 2]$ using 6 subintervals



Practice Problems: 10.4 # 1, 3&4 (write the area as a limit $n \to \infty$ and approximate using $n = 4$, use the calculator to determine the area to 1 or 2 decimals of accuracy)

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