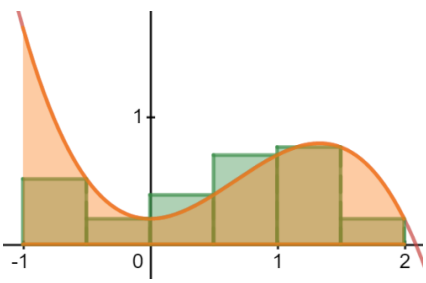
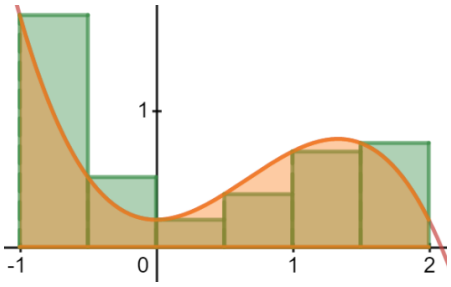
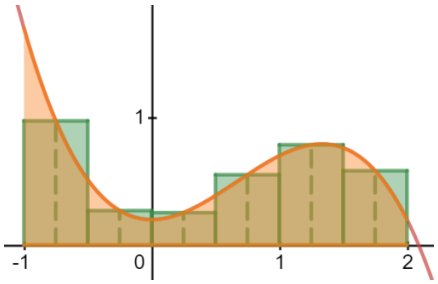
Area Under a Curve Part 2

Goal: • Can approximate the area under a curve using midpoint and trapezoids
Terminology: • None

Discussion question: Is using the average of the left and right enpoints to determine height the same as using the midpoint?



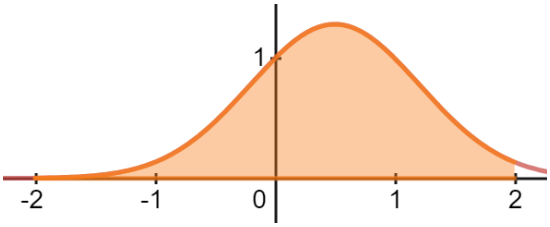


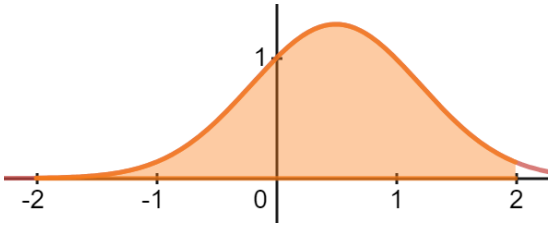


We have two new calculators to find the area

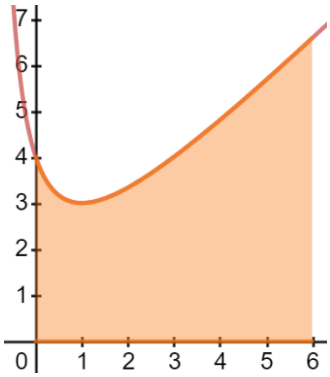
https://www.desmos.com/calculator/bilc70rubs
https://www.desmos.com/calculator/mkfcz7p8el

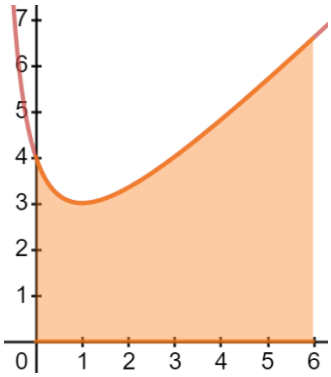
Example: Approximate the area under the curve $f(x) = e^{x-x^2}$ on the interval $[-2, 2]$ using 4 subintervals using rectangles with left, right, and middle endpoints AND seperately with trapezoids. Use the calculator to approximate the area with 100 subintervals. (The exact area is 2.23684246999…)





Practice: Determine the area under the curve $f(x) = \frac{4}{x+1} + x$ on the interval $[0, 6]$ using 3 subintervals





Practice Problems: 10.5 # 1, 3, 6
Extra Practice