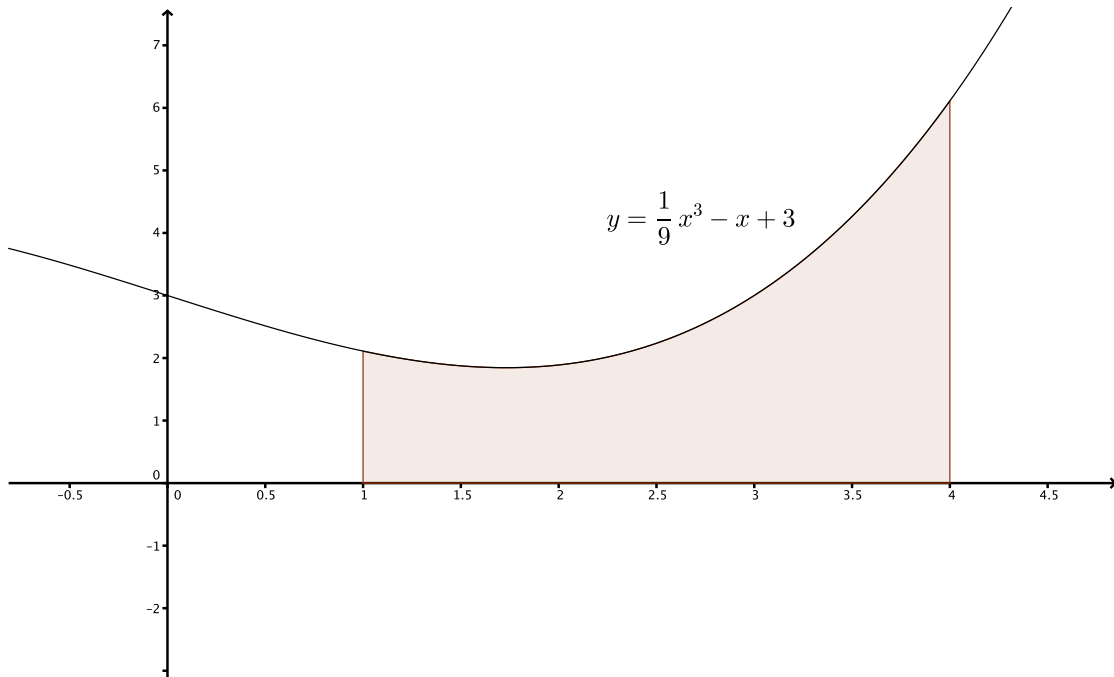


Quiz 1

The quiz is 2 pages for a total of 20 points.

1. Let $f(x) = \frac{1}{9}x^3 - x + 3$ be the curve depicted below. Find the area shown in the figure, which is the area under the curve $y = f(x)$ over the interval $[1, 4]$. (10 pts.)



2. Estimate the area you found above using a trapezoidal approximation with $n = 6$ trapezoids.
(5 pts.)

3. Given that

$$|E_T| \leq \frac{M(b-a)^3}{12n^2},$$

where $f''(x) \leq M$ for all $x \in [1, 4]$, what is the theoretical upper bound on the error of your answer from part (b)? (5 pts.)