DoNow

1. A Riemann Sum
   (a) Evaluate: $\lim_{n\to\infty} \sum_{k=0}^{n-1} \left(2+\frac{3k}{n}\right)^4 \frac{9}{n}$
   (b) Is this a *left box* or *right box* Riemann sum? Explain.

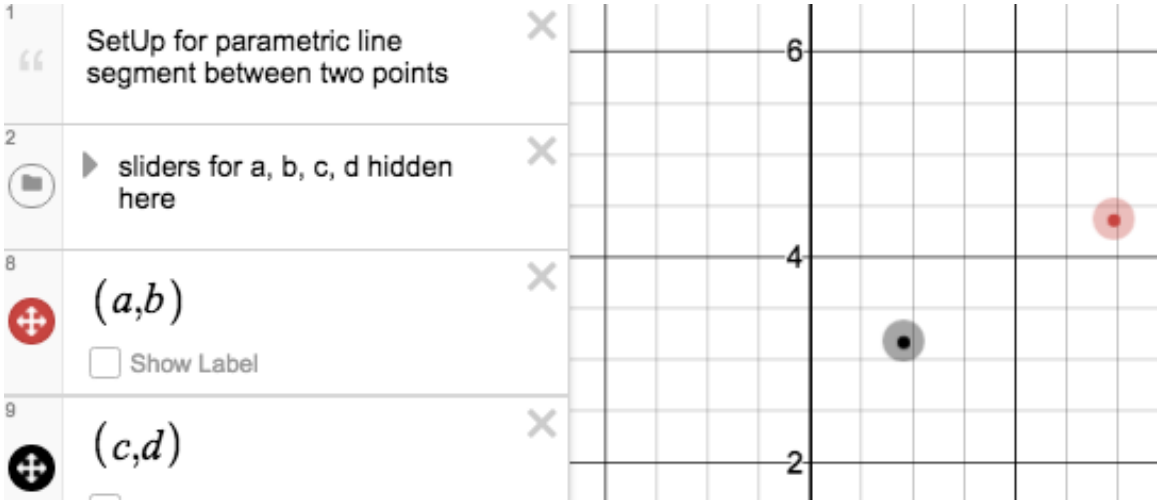
2. Consider $A(x) = \int_1^x \ln(t)\,dt$ where $x \geq 1$. On a graph board, draw $y = \ln(t)$ in the first quadrant. Use the graph and an very easy antiderivative to rewrite $A(x)$ without an integral.

More Questions

3. *Geometric Series*
   (a) Draw a picture to show that the series
   $$1+\frac{1}{2}+\frac{1}{2^2}+\ldots+\frac{1}{2^n}+\ldots$$
   converges.
   (b) Show how to find $S_n = \sum_{k=0}^{n} ar^k$
   (c) Under what conditions will the sequence $\{S_n\}$ converge as $n \to \infty$?

4. Improper Integrals
   (a) Evaluate $\int_0^\infty xe^{-x^2}\,dx$.
   (b) Explain (using words and pictures) how you can use part (a) to determine whether $\int_0^\infty e^{-x^2}\,dx$ converges.

5. *A parametric line segment*



   (a) Given points (a, b) and (c, d) as well as a parameter $t \in [0, 1]$, write a parametric equations for $x(t)$ and $y(t)$ that gives the line segment between the two points.

   (b) Put your equations together in the form $(x(t), y(t))$ that is used by Desmos.

   (c) Go to the Calculus page of `tetrahedra.net`. At the top of *Places to Visit* click the link for `Desmos setup for parametric line segment` and test your work.

6. Work on Cowculus.