

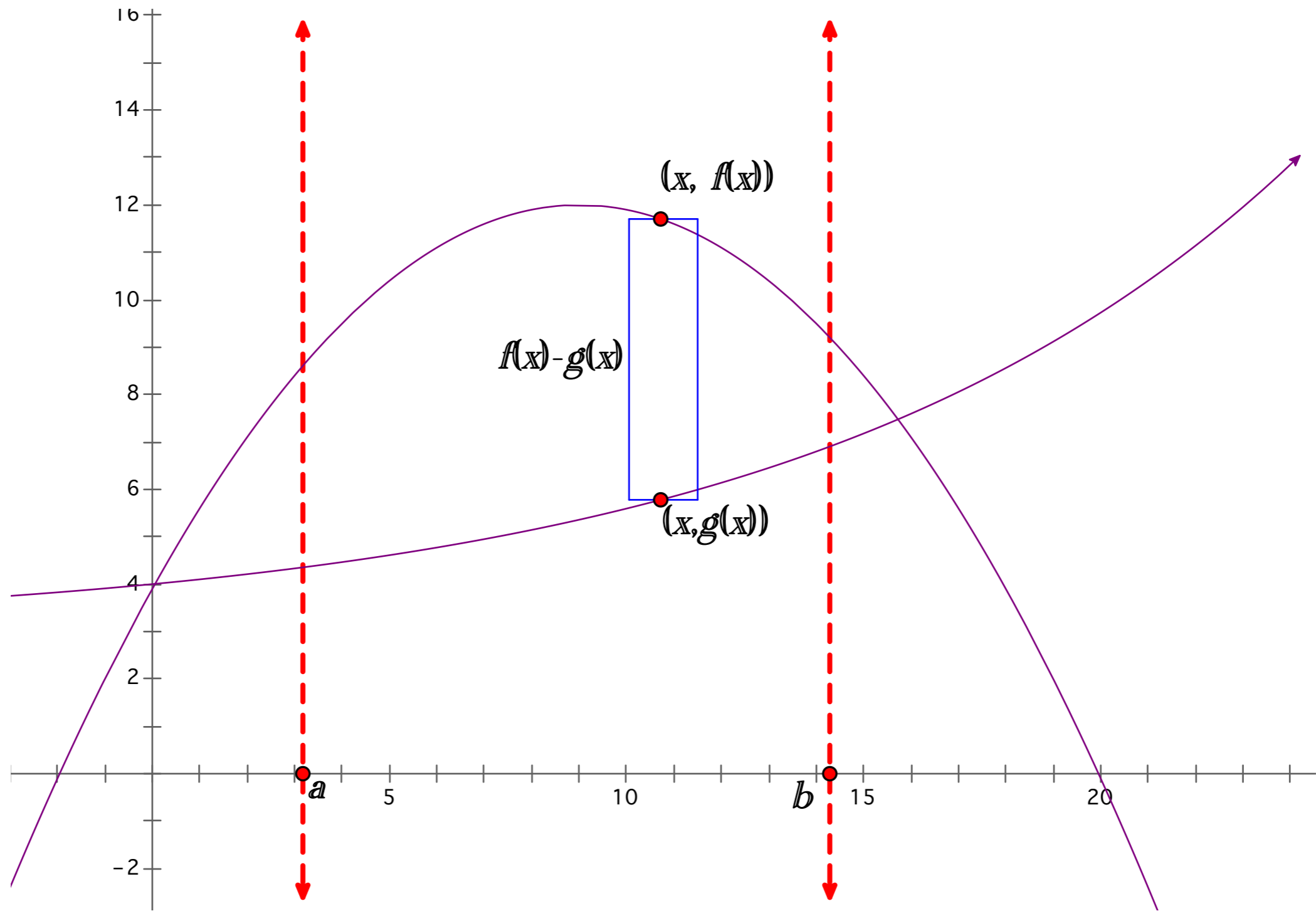
Area of a Region Between Two Curves (6.1)

January 28th, 2019

I. Area of a Region Between Two Curves

Area of a Region Between Two Curves: If f and g are continuous on $[a, b]$ and $g(x) \leq f(x)$ for all x in $[a, b]$, then the area of the region bounded by the graphs of f and g and the vertical lines $x=a$ and $x=b$ is

$$A = \int_a^b [f(x) - g(x)] dx \quad \cdot$$



II. Area of a Region Between Two Intersecting Curves

*Calculate the upper and lower limits of the integral by determining where the two graphs intersect.

*If a set of two curves intersects at more than two points, use multiple integrals to evaluate the area.

*It is sometimes useful to integrate with respect to y , which means using horizontal rectangles in setting up the integral.

Ex. 1: Find the area of the region bound by the curves $f(x) = 7\sin x$ and $g(x) = \frac{1}{5}x^2 - \frac{3}{10}x$. You may use a calculator.

Ex. 2: Find the area of the region bound by the two graphs and the x-axis by setting up an expression involving integrals in two different ways.

