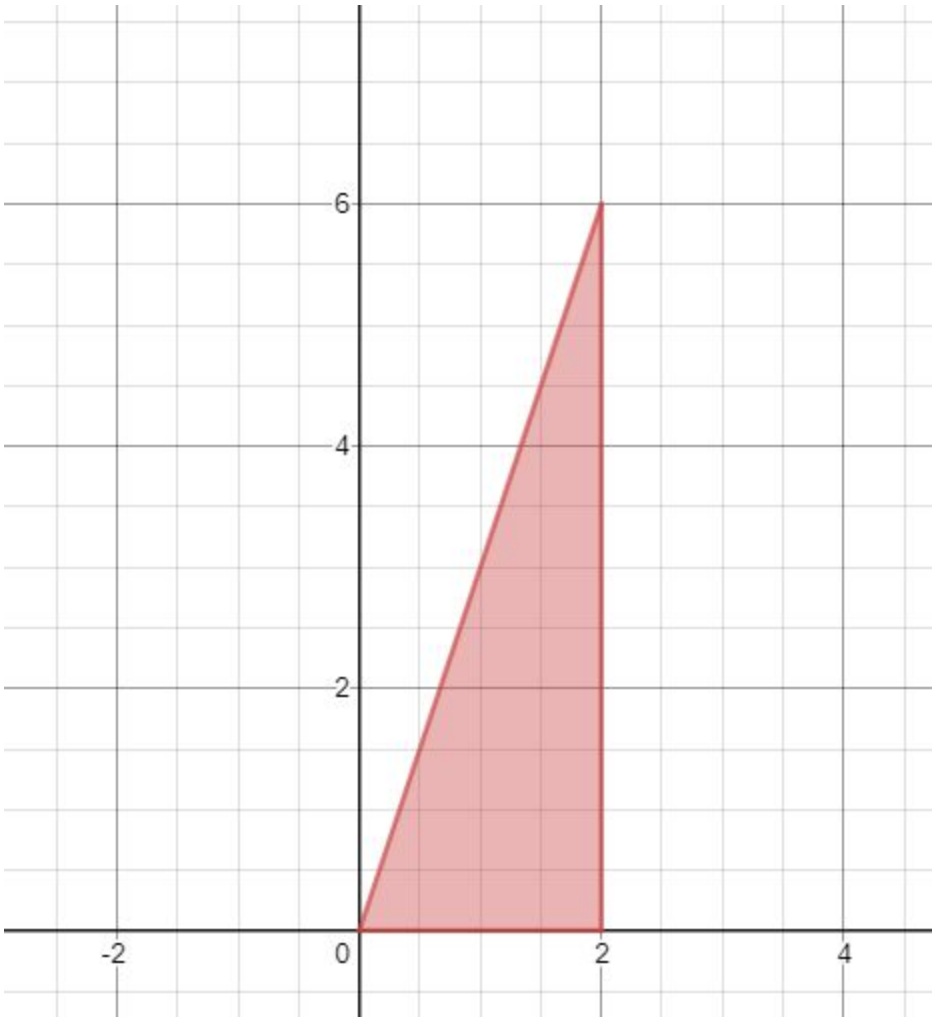
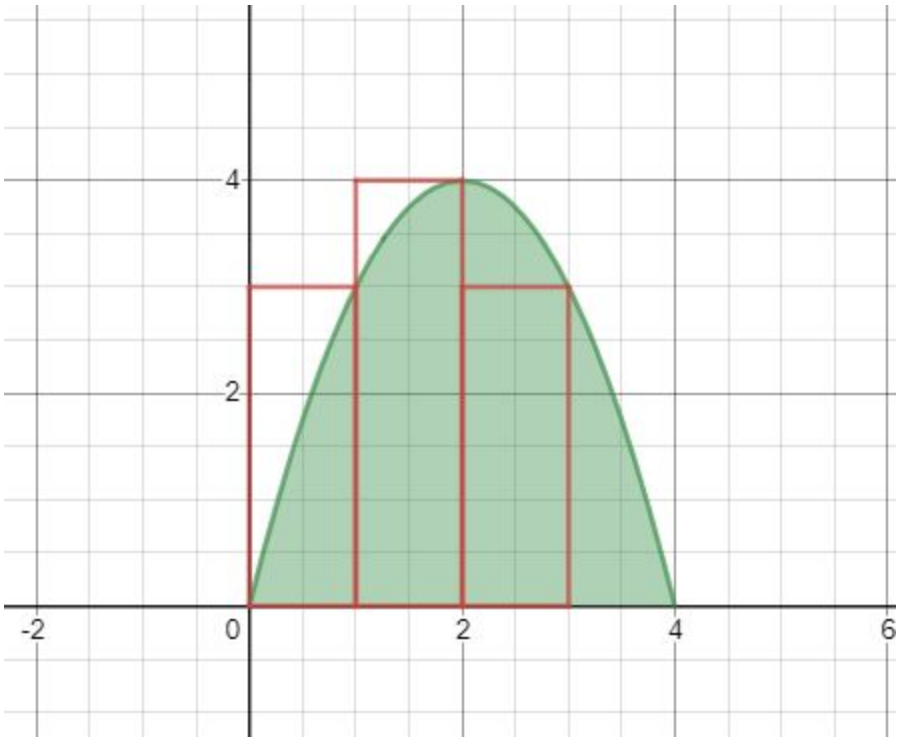
AREA UNDER CURVE USING DESMOS

We can find the area under a curve in 3 different ways. If the shape permits, we can use a standard area formula.



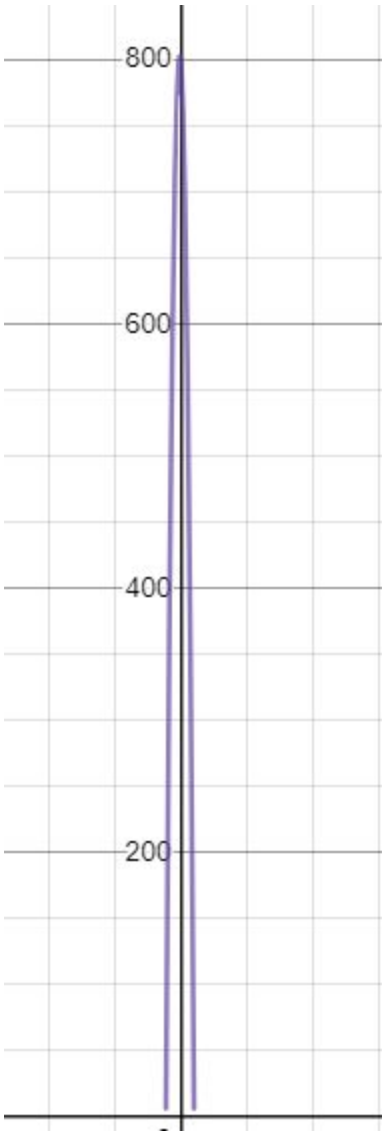
What is the base length? Height? What would that make the area under this curve?

The next method we can use is useful for when we cannot find the area using traditional area formula. We are able to use the Reimann Sum method. This method has us make rectangles to estimate the area under a curve.



What are the areas for our 3 rectangles? What would that make our estimate for the area under this curve? Is do you think that this an overestimate or an underestimate?

Finally, as we all learn in calculus, the integral function can be used to find the area under the curve for any function. All we have to do is take the definite integral under the bounds we want.



This curve intersects the x-axis at x=-11.277 and x=10.134, so we are going to take the integral of this function $z(x)=-7x^2-8x+800$ with a lower bound of -11.277 and an upper limit of 10.134. You can do this on Desmos, but make sure you remember your integrand (dx)!

Extra examples:
Find the area under the following curves using Desmos

1) $f(x) = -6x + 12$ {0,2}

2) $g(x) = -(x+4)^2 + 16$ {-8,0}

3) $G(x) = -16x^4+8x^3+3x^2+4x+3$ {area above x-axis}