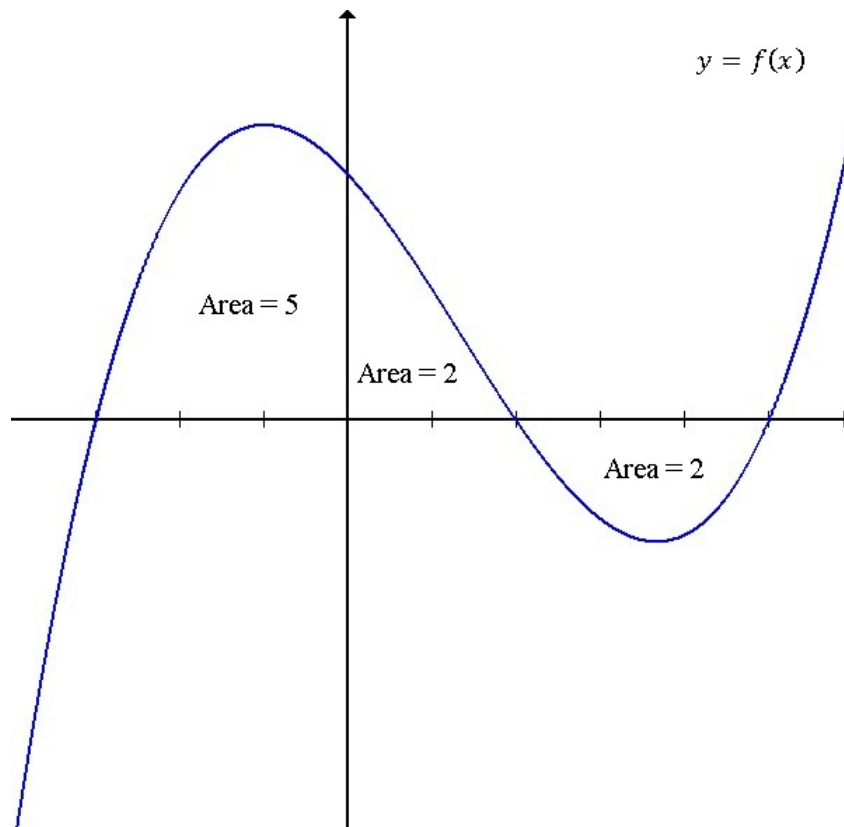


MATH 2554 Quiz 14 (Sections 5.3 and 5.4)

Due Tuesday, Apr. 21

This quiz is due Tuesday, Apr. 21 at the end of your drill. You may use your brain, notes, book, other humans and any pet of your choice. Collaboration with your classmates is encouraged. **Your solutions must be legible, in order, stapled, de-fringed, and with your name on the top right corner of each page.** If you fail to meet any of these requirements you will receive a zero. Each question is worth one point and is all-or-nothing.

1. The graph of f is shown below.



- (a) Write the formula for the area function A for f on the interval $[-3, 5]$ using integral notation.
- (b) Evaluate $A(0)$.
- (c) Evaluate $A(5) - A(2)$. Verbally describe what area in the picture this expression represents.

2. Let $F(x) = \int_2^x \sqrt{3t^t + 1} dt$. Find each of the following.
- (a) $F(2)$
 - (b) $F'(2)$
3. Use the Fundamental Theorem of Calculus (Part 2) to evaluate the following definite integral.

$$\int_0^{\frac{\pi}{2}} [(t+1)^{-1} - \cos t] dt$$

4. Find the area of the region bounded by the x -axis, the y -axis, and the graph of $g(x) = x^3 + 8$.
5. The average value of a function is quite similar to the idea of the average of a finite set of numbers. If f is integrable on the interval $[a, b]$, then the average value of f on $[a, b]$ is defined to be

$$\bar{f} = \frac{1}{b-a} \int_a^b f(x) dx.$$

Find the average value of $h(x) = e^{2x}$ on $[0, \ln 2]$.