

5. [13 points]

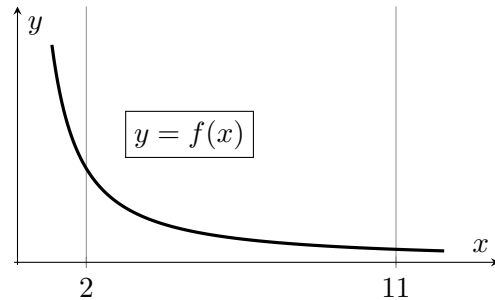
- a. [2 points] Find $\int \frac{x}{x+1} dx$, showing all of your work.

Answer: _____

Now consider the region in the first quadrant bounded by the x -axis, the lines $x = 2$ and $x = 11$, and the curve

$$f(x) = \frac{5x + 12}{x(x + 1)},$$

as shown in the figure to the right.



- b. [5 points] Find an expression involving one or more integrals for the volume of the solid of revolution given by rotating this region around the y -axis. Your expression should not contain the letter f . Do not evaluate your integral(s).

Answer: _____

- c. [4 points] Find a LEFT(3) approximation to your integral from part (b). Write out all the terms in your sum. You do not need to simplify, but your final answer should not involve the letter f .

Answer: _____

- d. [2 points] Evaluate your expression from part (b). You may use your answer from (a).

Answer: _____