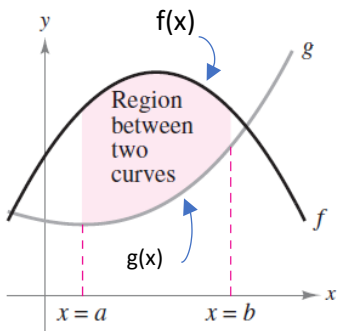


AP Calculus Ch. 7.1 – Area Between Two Curves



Vertical Orientation: (vertical rectangles between graphs)

Right bound

x_2

$$\text{Area} = \int_{x_1}^{x_2} (\text{Top graph} - \text{Bottom graph}) dx$$

Left bound

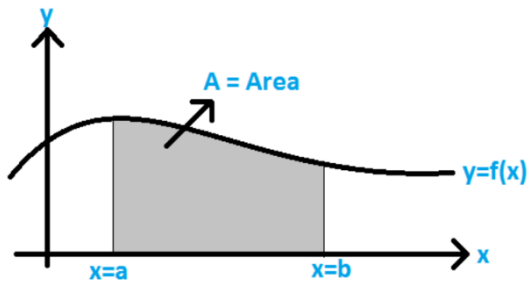
x_1

Expressions in terms of x

(Equations in the form of "y = ___")

Example 1: Area = _____

Example 2:

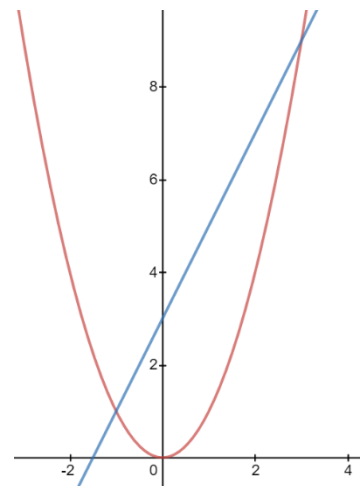


Area = _____

Example 3: Find the area of the region bounded by $y = x^2$ and $y = 2x + 3$

Steps:

- i) **Find bounds:** Find the point of intersection between the 2 graphs (by setting equations equal, & solving for x).
- ii) Identify the **top and bottom** function
- iii) Apply the Integral **Area Formula**.



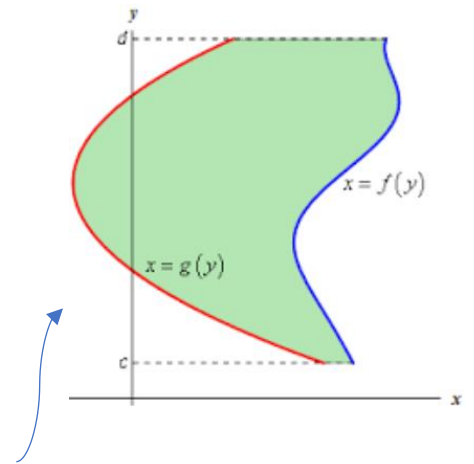
Horizontal Orientation: (horizontal rectangles between graphs)

Upper bound

$$\text{Area} = \int_{y_1}^{y_2} (\text{Right graph} - \text{Left graph}) dy$$

Lower bound

Expressions in terms of **y**
(Equations in the form of "x = ___")



Example 3: Area = _____

Example 4: Find area of the region bounded by the equations on right:

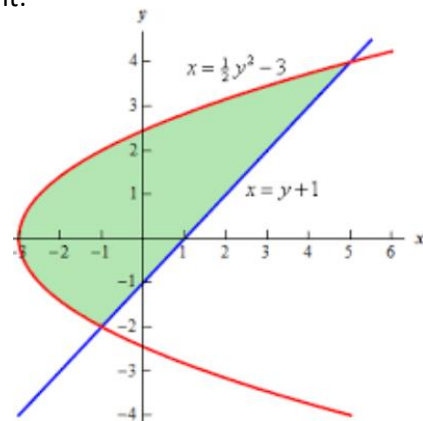
Steps:

i) Find bounds: Find the point of intersection between the 2 graphs

(by setting equations equal, & solving for y).

ii) Identify the right and left function

iii) Apply the Integral Area Formula



Example 5: Represent the area of shaded region to the right using integral notation

