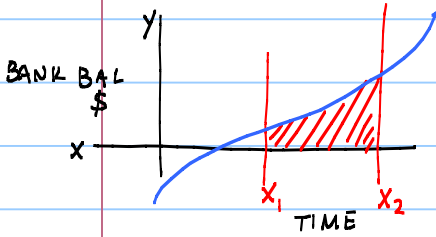


11.1: Understanding Area



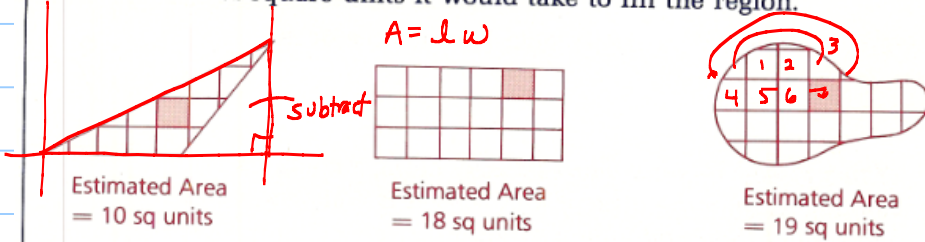
Fundamental
Theorem of
Calculus:
area under
curve betw 2
given x-values

function:
alg → for every x there's
only 1 y
geo → vertical line test
(only crosses function once)

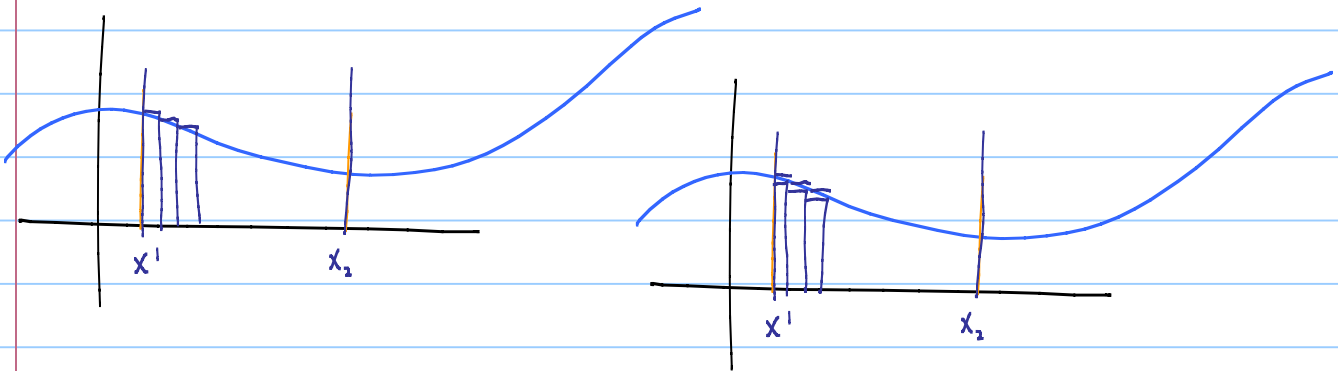
circle is not a
function

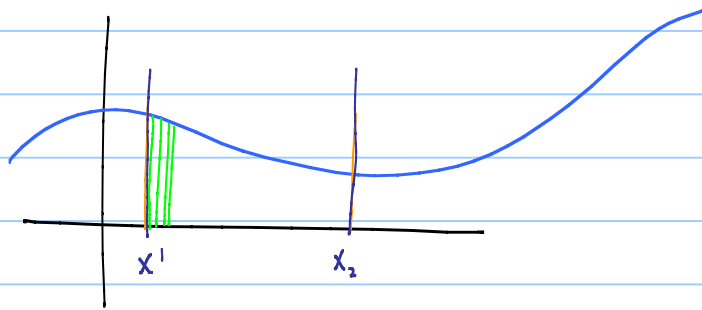
Definition The area of a closed region is the number of square units of space within the boundary of the region.

We can estimate the area of a region by determining the approximate number of square units it would take to fill the region.



Counting squares, however, is neither the easiest nor the best way to find the area of a region. We will develop formulas for computing the areas of regions bounded by the common geometrical figures. Such regions are usually named by their boundaries, as when we speak of "the area of a rectangle."

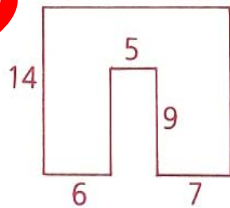




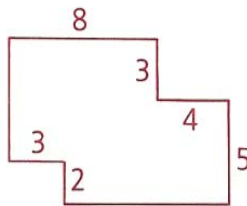
Problem Set A

1 Find the area of each figure below. (Assume right angles.)

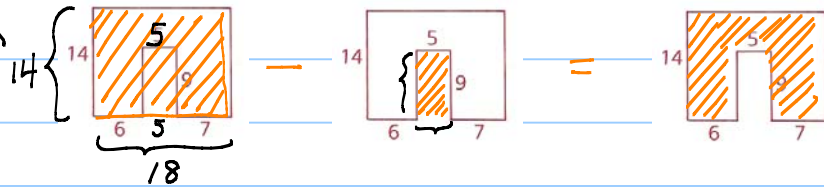
a



b



Ia Subtraction

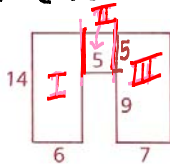


$$(10+4)(10+8) -$$

$$100 + 80 + 40 + 32 -$$

$$252 - 45 = 207 \text{ units}^2$$

II Add (Vertical breaks)



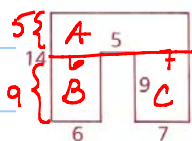
$$\text{PART I} + \text{PART II} + \text{PART III} = \text{WHOLE}$$

$$6(14) + 5(5) + 7(14)$$

$$84 + 25 + 98$$

$$207 \text{ units}^2$$

III Add (Horizontal breaks)



$$A + B + C = \text{Whole}$$

$$5(18) + 9(6) + 9(7) =$$

$$90 + 54 + 63 = 207 \text{ units}^2$$