

+10

Statement

a) What is the area of the region in the first quadrant bounded by

- $y = 9$

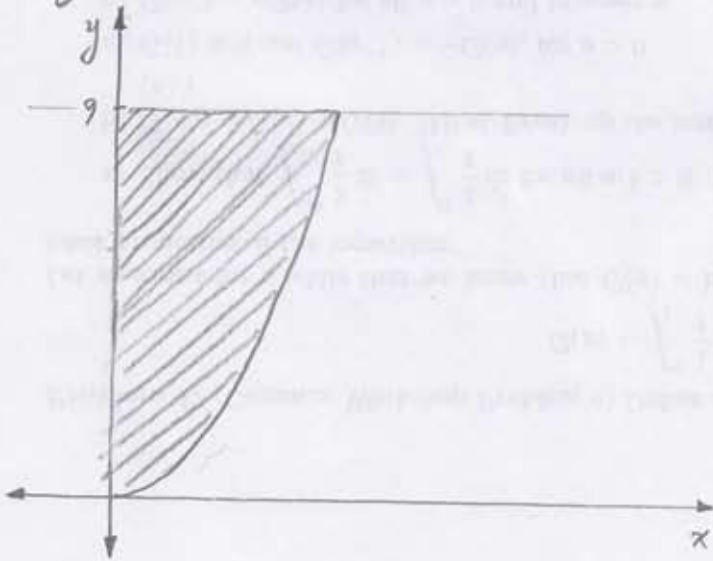
- $y = x^2$

- $y$ -axis

b) How does the answer to a) compare to  $\int_0^9 \sqrt{x} dx$ ? Please explain.

Solution:

a) To solve this problem, I drew the graph of the region to help me visualize the solution.



From the graph, I see the area is just

$$\begin{aligned} & \int_0^3 9 - x^2 dx \\ &= \left( 9x - \frac{x^3}{3} \right)_0^3 \\ &= 18 \text{ (units)} \end{aligned}$$

good!

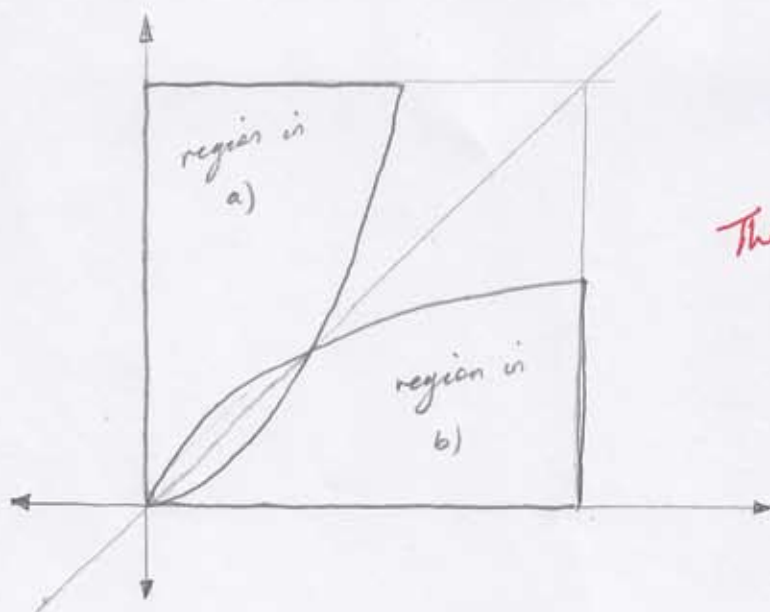
b) Find.

$$\begin{aligned}\int_0^9 \sqrt{x} \, dx &= \int_0^9 x^{\frac{1}{2}} \, dx \\ &= \left( \frac{2}{3} x^{\frac{3}{2}} \right)_0^9 \\ &= 18\end{aligned}$$

The two numbers are the same. This is because  $\int_0^9 \sqrt{x} \, dx$  is calculating the area of the region bounded by

- $y = \sqrt{x}$
- $x$ -axis
- $x = 9$

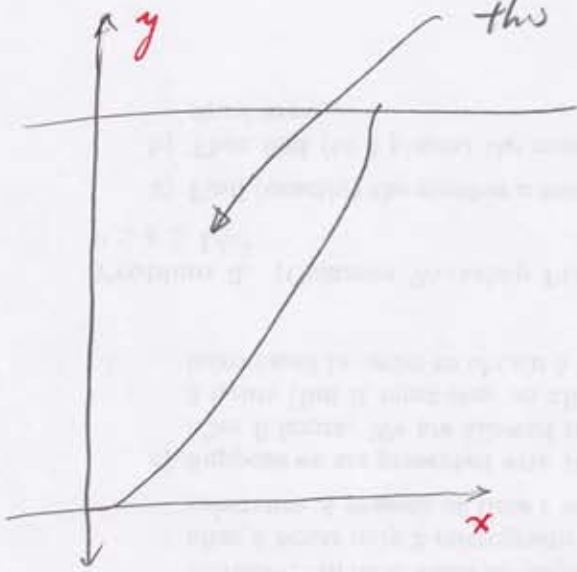
This region is a reflection of the region described in a) about the line  $y = x$ . ) excellent!



Thanks for the graph.

+3

a)



this is it. what is "it"?

I think this area's  
can you be a bit  
more specific?

$$\int_0^9 x^2 dx = 243 + C = 243$$

how did you  
get this #?  
Show work!

definite  
integral!

What's not the  
same?

"because"

b)

Not the same.

$$\int_0^9 \sqrt{x} dx = 18$$

o.k.

different

"numbers"

+0 for math  
+1 for language

(The functions are different, so not the same (#'s, ~~data!~~) why?

~~(Also, being a movie executive is so much work. At least~~

~~I didn't cheat off of my courses (George Morhal.)~~ not relevant

I think you have  
missed the point of this  
question: the two areas are the  
same because one is just  
a reflection of the other.

+2 for math  
+0 for English/  
language