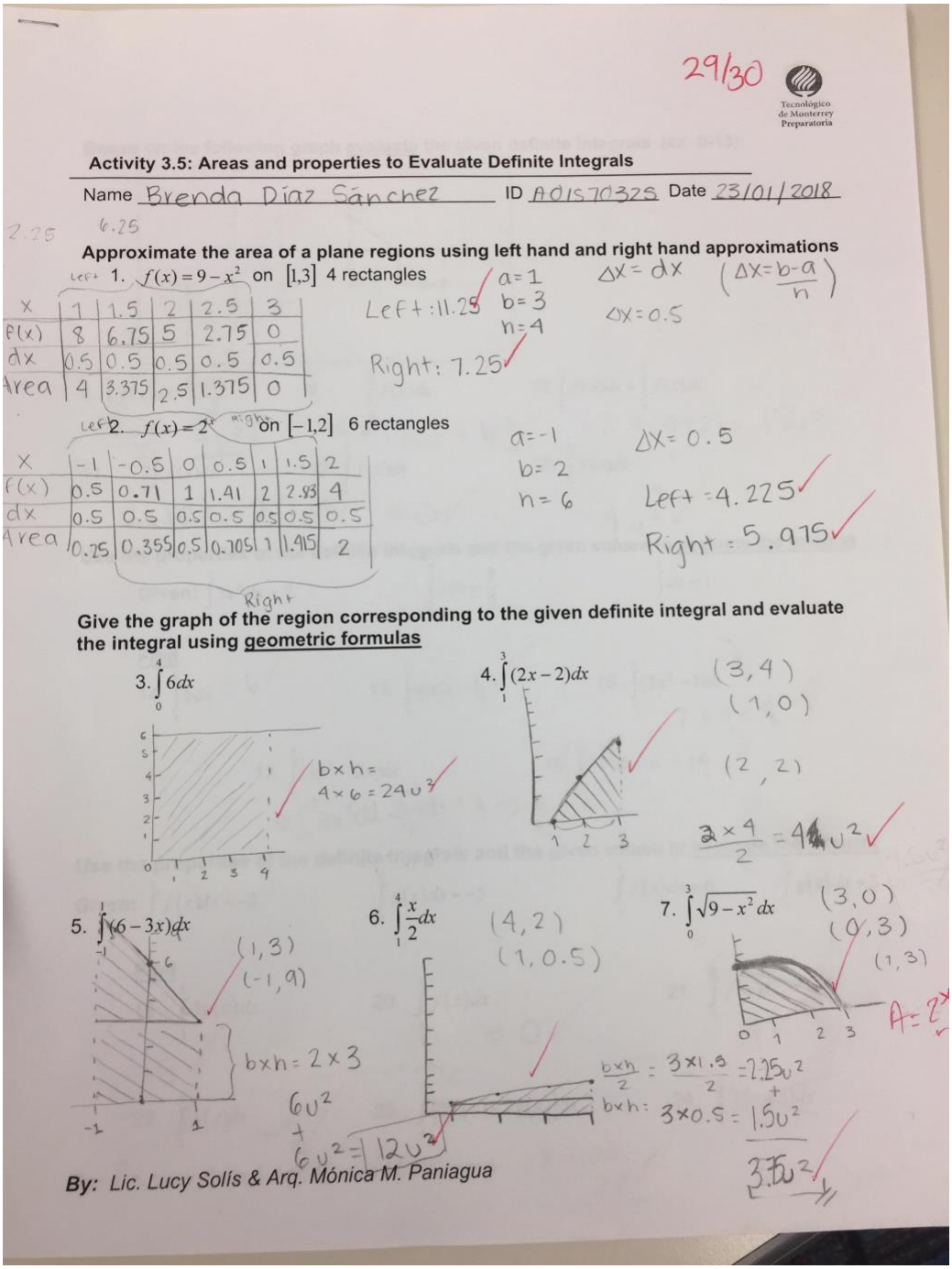
I think that this activity from the first partial is significant because this method helps me evaluate definite integrals and it also helps me find the “area under the curve”, so this topic can be seen as in physics as in calculus. I like following methods and I critical thinking.



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Activity 3.5: Areas and properties to Evaluate Definite Integrals

Name Brenda Díaz Sánchez ID A01570325 Date 23/01/2018

2.25 6.25

Approximate the area of a plane regions using left hand and right hand approximations

Left 1. $f(x)=9-x^2$ on $[1,3]$ 4 rectangles

x	1	1.5	2	2.5	3
f(x)	8	6.75	5	2.75	0
dx	0.5	0.5	0.5	0.5	0.5
Area	4	3.375	2.5	1.375	0

a=1 b=3 n=4 ΔX = dX (ΔX = b−a / n) ΔX = 0.5

Left: 11.25

Right: 7.25

Left 2. $f(x)=2^x$ on $[-1,2]$ 6 rectangles

x	-1	-0.5	0	0.5	1	1.5	2
f(x)	0.5	0.71	1	1.41	2	2.83	4
dx	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Area	0.25	0.355	0.5	0.705	1	1.415	2

a=-1 b=2 n=6 ΔX = 0.5

Left = 4.225

Right = 5.975

Right

Give the graph of the region corresponding to the given definite integral and evaluate the integral using <u>geometric formulas</u>

3. $\int_0^4 6dx$

b×h = 4×6 = 24u²

4. $\int_1^3 (2x-2)dx$

(3,4) (1,0) (2,2)

2×4 / 2 = 4u²

5. $\int_{-1}^{1} (6-3x)dx$

(1,3) (-1,9)

b×h = 2×3 = 6u²

+ 6u² = 12u²

6. $\int_1^4 \frac{x}{2}dx$

(4,2) (1,0.5)

b×h / 2 = 3×1.5 / 2 = 2.25u²

+

b×h = 3×0.5 = 1.5u²

3.75u²

7. $\int_0^3 \sqrt{9-x^2}dx$

(3,0) (0,3) (1,3)

A = 2

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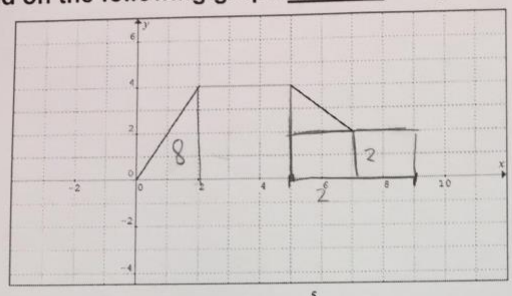
Based on the following graph <u>evaluate</u> the given definite integrals (ex: 8-13):



8. $\int_0^2 f(x)dx$ $\frac{b \times h}{2}$ $\frac{2 \times 4}{2} = 4u^2$

9. $\int_0^5 f(x)dx$ $4 + 12 = 16u^2$

10. $\int_2^5 f(x)dx + \int_5^7 f(x)dx$ $12 + (4+2) = 18u^2$

11. $2\int_5^9 f(x)dx$ $2(10) = 20u^2$

12. $\int_2^2 f(x)dx$ $= 0$

13. $\int_2^0 f(x)dx$ $-4u^2$

Use the properties of the definite integrals and the given values to <u>evaluate the integral</u>

Given: $\int_1^2 3x^2dx = 7$ $\int_1^2 xdx = \frac{3}{2}$ $\int_1^2 dx = 1$

<u>Find</u>

14. $\int_1^2 6dx = 6$

15. $\int_1^2 4xdx = 6$

16. $\int_1^2 (3x^2+1)dx$ $7 + 1 = 8$

17. $\int_1^2 (3x^2 - 2x)dx$ $\int_1^2 3x^2dx - 2\int_1^2 xdx = 7 - 3 = 4$

18. $\int_2^1 6x^2dx = -14$

Use the properties of the definite integrals and the given values to <u>evaluate the integral</u>

Given: $\int_1^2 f(x)dx = -2$ $\int_2^5 g(x)dx = -5$ $\int_2^5 f(x)dx = 6$ $\int_5^7 g(x)dx = 3$

<u>Find</u>

19. $\int_5^2 3g(x)dx$ 15

20. $\int_3^3 f(x)dx$ $= 0$

21. $\int_1^5 f(x)dx$ 14

22. $\int_2^7 g(x)dx$ -2

23. $\int_2^5 [3f(x) - 2g(x)]dx$

24. ~~$\int_4^7 f(x-2)dx$~~

$18 + 10 = 28$

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