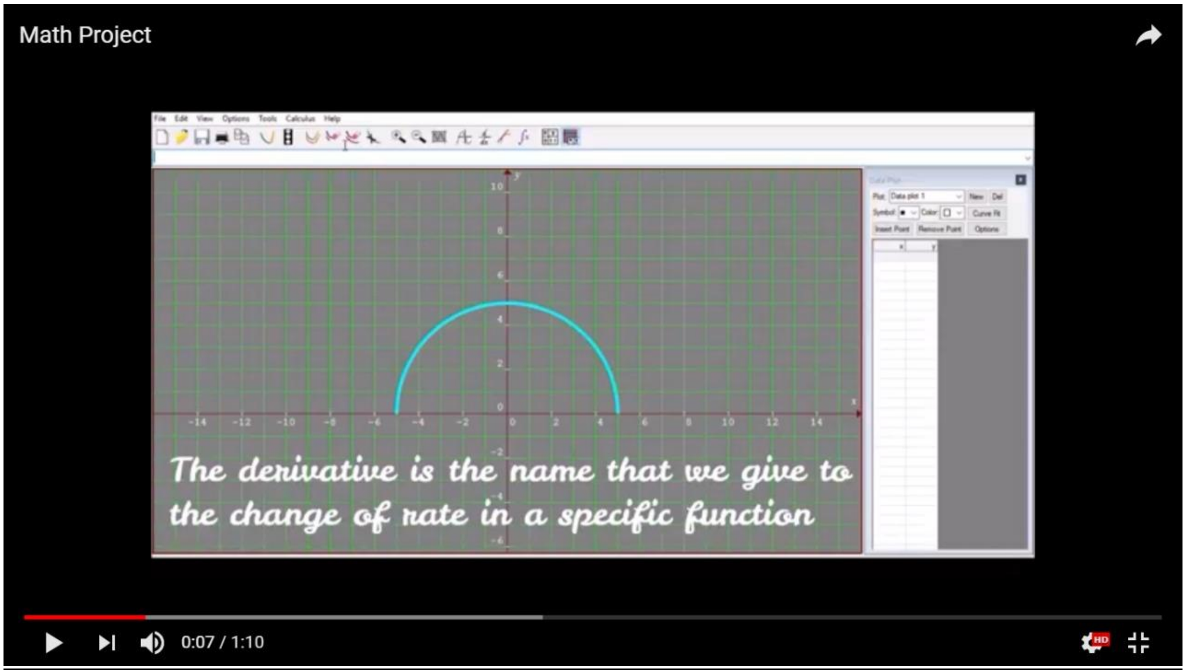
Math Project
The derivative is the name that we give to the change of rate in a specific function
0:07 / 1:10


Math Project
DERIVATIVES
and
ANTIDERIVATIVES
0:02 / 1:10

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100
excellent!!
!!

Cálculo II
Proyecto Segundo Parcial

Integrales y Antiderivadas

Profesor:
Nancy Herrera

Alumno:
Ingrid Islas Vásquez
A01570175

a. *Determina la velocidad del auto cuando alcanza al autobús*

3ft x 0.3054 = 0.9162m

45ft x 0.3054 = 13.74m

Carro	Autobus
$a(t) = 0.9162$	-
$v(t) = 0.9162t + 0$	$v(t) = 13.74$
$p(t) = 0.4581t^2 + c$	$p(t) = 13.74t + c$

$0.4581t^2 \underline{+ c} = 13.74t \underline{+ c}$
$0.4581t^2 = 13.74t$
$0.4581t^2 - 13.74t = 0$
$t\,(0.4581t - 13.74) = 0$
$t\,(0.4581t = 13.74) = 0$
$t\,(\,t = 29.99\,) = 0$
$t = 0$ **$t = 29.99s$**

$v(29.99) = 0.9162(29.99) + 0$
$\underline{\mathbf{v = 27.47\ m/s}}$

CALCULUS II

FIRST PARTIAL

QUIZ 1A

Name: Ingrid Islas Vásquez **ID#:** A01570175 **Date:** 17 / 01 / 18

100 excellent!! :)

Answer the following problems with complete procedure.

1. Find the **approximate** value of $(3.04)^3$ (20 pts)

$f(x) = x^3 \quad f'(x) = 3x^2$

$\approx x^3 + 3x^2(dx)$

$\approx (3)^3 + 3(3)^2(.04)$

≈ 28.08

2. Given the equation $f(x) = x^2 - 2x + 3$ find the line tangent to the curve at $x = a = 0$. (20 pts) $y=3$

$f'(x) = 2x - 2$

$y = 3 \quad m = -2$

$y - 3 = -2(x - 0)$

$y - 3 = -2x$

$y = -2x + 3$

3. The edge of a cube was found to be 20 cm. with a possible error in measurement of 0.1cm. (dx) Estimate the maximum possible error in computing the volume of the cube (20 pts)

$V = x^3$

$dV = 3x^2 dx$

$dV = 3(20)^2(.1)$

$dV = 120\,cm^3$

$y = \frac{3}{4}x + \frac{25}{4}$

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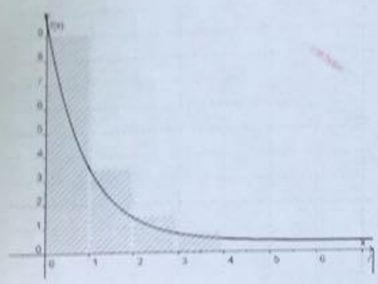
1st partial Quiz # 2A

90

Name Ingrid Islas Vásquez I.D. A01570175 March, 2017

I. Multiple choice. Choose the letter of the right answer (10 points).

1. Choose the sentence that best describes the approximate area below the graph of $f(x)$:



a) Approximation of the area on the interval $[0,4]$ using 4 partitions with left-hand calculations.
b) Approximation of the area on the interval $[1,5]$ using 4 partitions with right-hand calculations.
c) Approximation of the area on the interval $[0,4]$ using 4 partitions with right-hand calculations.
d) Approximation of the area on the interval $[1,5]$ using 4 partitions with left-hand calculations.

II. Evaluate the integral using the following values. **SHOW THE STEPS OF YOUR PROCEDURE.** (5 points each)

$\int_2^4 x\,dx = 9$ $\int_2^4 x^3\,dx = 54$ $\int_2^4 dx = 7$

a. $\int_2^4 (5x^3+4x+6)\,dx =$ $5(54)+4(9)+6(7) = 348$
b. $\int_2^4 23\,dx =$ $23(7) = 161$
c. $\int_3^3 x^3\,dx =$ 0
d. $\int_4^2 x\,dx =$ -9

IV. Procedure. Solve the following problem *showing your entire procedure.*

1) Approximate the area of a plane regions using left hand, right hand and middle points approximations.

$f(x) = 9 - x^2$ on $[3,5]$ 4 rectangles **(20 points)**

Area (Left hand) = $-10.75u^2$
Area (Right hand) = $-18.75u^2$

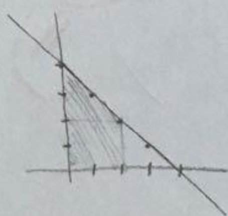
$\Delta x = \frac{5-3}{4} = .5$

$(.5)f(3) = 0$
$(.5)f(3.5) = -1.625$
$(.5)f(4) = -3.5$
$(.5)f(4.5) = -5.625$
$(.5)f(5) = -8$

2) Give **the graph (remember to <u>shade</u> the corresponding area)** whose area is given by the following definite integral. Then use a **geometric formula** to **evaluate the integral** (by finding the area) **(15 points each)**

$\int_0^2 (4-x)\,dx$

Graph



Procedure by geometric formulas

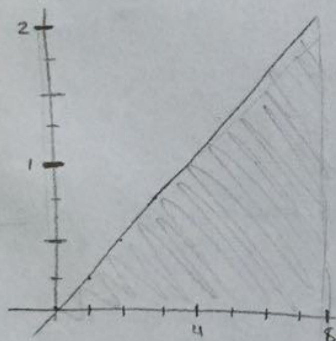
$\square = 2\times 2 = 4$

$\triangle = \frac{2\times 2}{2} = 2$

$4+2 = 6u^2$

3) $\int_0^8 \frac{x}{4}\,dx$

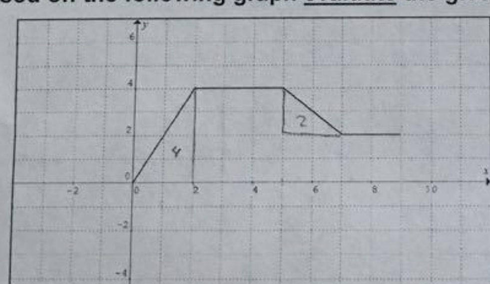
Graph



Procedure by geometric formulas

$\triangle = \frac{8\times 2}{2} = 8u^2$

3) **Based on the following graph evaluate the given definite integrals (5 points each):**



-10

1. $\int_0^3 f(x)dx$ $8u^2$

2. $\int_4^2 f(x)dx$ $-8u^2$

3. $\int_5^7 f(x)dx$ $8u^2$ $6u^2$

4. $\int_0^8 f(x)dx$ $26u^2$ $24u^2$

90 very good

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Calculus II
2^{nd} partial Quiz #1A

Name Ingrid Islas Vásquez I.D. A01570175 Date: 23/02/18

I. Determine if the following propositions are True (T) or False(F) (5 points each):

1. (T) Having $\int(\sin x+\cos x)dx$ is the same as having $\int(\sin x)dx+\int(\cos x)dx$
2. (F) The answer for $\int 6\frac{\csc(3x)}{\sin(3x)}dx$ is $-2\cot(3x)+C$ $6\left(\frac{\frac{1}{\sin(3x)}}{\sin(3x)}\right)=6\left(\frac{1}{\sin(3x)^2}\right)=6\csc(3x)^2$ $-2\cot(3x)+c$
3. (T) $\int x(x^2+3)^2dx=\frac{1}{6}(x^2+3)^3+C$ $\frac{1}{2}\frac{(u)^3}{3}$
4. (F) $\int(x^2-3)\tan(x^2-3x)dx=-\ln|\cos(x^2-3x)|+C$
5. (F) The integral of $\int(\frac{2}{2}\sin 3x+3x)dx$ is $-6\sin 3x+3+C$ $-\frac{2}{3}\cos$

20

II. Solve the following exercises, show ALL your procedure and frame your final answer. (15 points each).

If the equation of acceleration of an object is $a(t)=\frac{3}{t-4}$ and the velocity at t =5 is 8 m/s, then find the equation that determines the velocity of the object at any time 't'.

$v(5)=8=\underline{\underline{3\ln|t-4|+8}}$

15

III. Find the antiderivative or integral of the following problems. SHOW YOUR ENTIRE PROCEDURE. (15 pts each)

1- $h(x)=\underset{48}{96}Sin^2(2x+\pi)Cos(2x+\pi)$

$u=\sin(2x+\pi)$ $\quad 48\int u^2=\frac{48u^3}{3}=16u^3+c=\underline{\underline{16[Sen(2x+\pi)]^3+c}}$

$du=2\cos(2x+\pi)$

15

2- $v(t) = \dfrac{e^{5/t}}{-\frac{5}{3} 3t^2}$ $\quad u = 5t^{-1}$, $du = -5t^{-2}$ $\quad -\dfrac{3}{5} e^{5/t} + c$

10

$v(t) = \dfrac{e^{5/t}}{3t^2} = \dfrac{t^{-2} e^{5/t}}{3}$ $\quad -\dfrac{1}{15} e^{5/t} + c$

$u = 5t^{-1}$
$du = -5t^{-2}$

3- $\int 3x \, Cot(6x^2-1) Sin(6x^2-1) dx$

$12x$

$\frac{1}{4} \int \frac{\cos(6x^2-1)}{\cancel{\sin(6x^2-1)}} \cancel{\sin(6x^2-1)} \, dx = \dfrac{\sin(6x^2-1)}{4} + c$

15

4- $\int 7\sec(3x)\tan(3x)\,dx$ $\quad \dfrac{7}{3} \sec(3x) + c$

15

85

Prepa Tec
Calculus II

Campus Cumbres
2^{st} partial Quiz # 2A

Name Ingrid Islas Vásquez I.D. A01570175 March, 2018

I . Solve the following integrals. SHOW THE STEPS OF YOUR PROCEDURE. (20 points each)

1. $\int Sin^3(2x)dx$

$\int \sin(2x)\sin^2(2x)\,dx$

$\int \sin(2x)\cdot(1-\cos^2(2x))\,dx$

$\int \sin(2x) - \sin(2x)\cos^2(2x)\,dx$

$u = \cos 2x$

$du = -2\sin 2x$

$-\frac{1}{2}\cos(2x) + \frac{1}{4}\cos^3 2x + c$

15

$\int \sin(2x)\sin^2(2x)\,dx$

$\int \sin(2x)(1-\cos^2(2x))\,dx$

$\int \sin(2x) - \sin(2x)\cos^2(2x)\,dx$

$-\frac{1}{2}\cos(2x) + \frac{1}{6}\cos^3(2x) + C$

2. $\int x^6\cos^2(x^7)dx$

$\int x^6\left[\frac{1}{2}(1+\cos 2(x^7)\right]dx$

$\frac{1}{2}\int x^6(1+\cos 2x^7)\,dx$

$\frac{1}{2}\int x^6 + x^6\cos 2x^7\,dx$

$\frac{1}{2}\left(\frac{x^7}{7} + \frac{1}{14}\sin 2x\right) + c$

$\frac{x^7}{14} + \frac{1}{28}\sin(2x) + c$

20

3. $\int 9x^4\tan^3(x^5)dx$

$\int 9x^4\left[\tan(x^5)\tan^2(x^5)\right]dx$

$\int 9x^4\left[\tan(x^5)(\sec^2(x^5)-1)\right]dx$

$\int 9x^4(\tan(x^5)\sec^2(x^5) - \tan(x^5))\,dx$

$u = \tan x^5$

$du = 5x^4\sec^2 x^5$

$\int \frac{9}{5}x^4\tan(x^5)\sec^2(x^5) - 9x^4\tan(x^5)\,dx$

$\frac{9}{5}\frac{\tan^2(x^5)}{2} - \frac{9}{5}\tan x^5 + c$

$\int 9x^4\left[\tan(x^5)\tan^2(x^5)\right]dx$

$\int 9x^4\left[\tan(x^5)(\sec^2(x^5)-1)\right]dx$

$\int 9x^4\left[\tan(x^5)\sec^2(x^5) - \tan(x^5)\right]dx$

$\int \frac{9}{5}x^4\tan(x^5)\sec^2(x^5) - \frac{9}{5}x^4\tan(x^5)\,dx$

$\frac{9}{10}\tan^2(x^5) + \frac{9}{5}\ln|\cos(x^5)| + c$

10

4. $\int x^3 sin^2(x^4)dx$ $\quad \int x^3\left[\frac{1}{2}(1-\cos 2(x^4)\right]dx$

$\frac{1}{2}\int x^3 - x^3\cos 2x^4\, dx$

$\frac{1}{2}\left(\frac{x^4}{4} - \frac{1}{8}\sin 2x^4\right) + c$

$\frac{x^4}{8} - \frac{1}{16}\sin 2x^4 + c$ ✓

20/

5. $\int Cot^2(5x)dx =$ $\quad \int \csc^2(5x) - 1\, dx$

$-\frac{1}{5}\cot(5x) - x + c$ ✓

20/

BONUS (8 POINTS)

$\int Cos^5(3x)dx$ $\quad \int \cos(3x)\cos^2(3x)\cos^2(3x)\,dx$

$\frac{1}{4}\int \cos(3x)(1+\cos 6x)(1+\cos 6x)\,dx$

$\frac{1}{4}\int \cos(3x)\left(1+2\cos(6x)+\cos^2(6x)\right)dx$

100 excellent!!

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Calculus II

3rd partial Quiz # 1B

Name Ingrid Islas Vásquez I.D. A01570175 April, 2018

Choose T (true) or F (false) for each statement.

1. The integral of $\int (8x+4)(x^2+x)^3\,dx$ is $\frac{1}{4}(x^2+x)^4+C$ — F T

2. The integral of $\int 4x\sqrt{2x-3}\,dx$ is $(2x-3)^{\frac{5}{2}}+(2x-3)^{\frac{3}{2}}+C$ — F T

x2

3. The partial fraction decomposition of the integral $\int \frac{x^2+4}{3x^3+4x^2-4x}dx$ is $\frac{A}{x}+\frac{B}{(3x-2)}+\frac{C}{(x+2)}$ — F T

4. The integral of $\int \frac{x^2+26x+12}{5x^3+3x^2}dx$ is $-\frac{9}{5}\ln|5x+3|+2\ln|x|-\frac{4}{x}+C$ — F T

5. Solve the following integral, **SHOW THE STEPS OF YOUR PROCEDURE.**

$\int \frac{2x^3-4x^2-15x+5}{x^2-2x-8}\,dx$

~~$\int \frac{3x^3-23x^2-2x+112}{x^2-5x-14}dx$~~

$$\begin{array}{r} 2x \\ x^2-2x-8 \overline{)\,2x^3-4x^2-15x+5} \\ -2x^3+4x^2+16x \\ \hline x+5 \end{array}$$

$\int 2x + \frac{x+5}{x^2-2x-8} \rightarrow \frac{A}{(x-4)}+\frac{B}{(x+2)}$

$A(x+2)+B(x-4)=x+5$

$A(4+2)=4+5$
$A(6)=9$
$A=3/2$

$B(-2-4)=-2+5$
$B(-6)=3$
$B=-1/2$

$\int 2x+\frac{3/2}{x-4}-\frac{1/2}{x+2}$

$= x^2+\frac{3}{2}\ln|x-4|-\frac{1}{2}|x+2|+c$ ✓

100
excellent!!

CALCULUS II

QUIZ 2 B 3RD PARTIAL

Name Ingrid Islas Vásquez ID A01570175 DATE:______

Jasmín Salazar

+4

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (12.5 pts each one)

Evaluate the integral.

1) $\int 4xe^x\,dx$

A) $4xe^x - 4e^x + C$ B) $xe^x - 4e^x + C$ C) $4e^x - e^x + C$ D) $4e^x - 4xe^x + C$

1) A

2) $\int e^{5x}\cos 4x\,dx$

A) $\frac{e^{5x}}{2}[\sin 4x + \cos 4x] + C$

B) $\frac{1}{41}[4e^{5x}\sin 4x + 5\cos 4x] + C$

C) $\frac{e^{5x}}{41}[4\sin 4x + 5\cos 4x] + C$

D) $\frac{e^{5x}}{41}[4\sin 4x - 5\cos 4x] + C$

2) AYUDADA

3) $\int (2x-1)\ln(24x)\,dx$

$(x^2-x)\ln(24x) - \int (x^2-x)\frac{1}{x}\,dx \to \int x-1 \Rightarrow \frac{x^2}{2}+x$

A) $\left(x^2 - x\right)\ln 24x - \frac{x^2}{2} + x + C$

B) $\left(x^2 - x\right)\ln 24x - \frac{x^2}{2} + 2x + C$

C) $\left(\frac{x^2}{2} - x\right)\ln 24x - \frac{x^2}{4} + x + C$

D) $\left(x^2 - x\right)\ln 24x - x^2 + x + C$

3) A

4) $\int 23x\cos\frac{1}{2}x\,dx$

A) $23x\sin\left(\frac{1}{2}\right)x - 46\cos\left(\frac{1}{2}\right)x + C$

B) $46x\sin\left(\frac{1}{2}\right)x + 92\cos\left(\frac{1}{2}\right)x + C$

C) $92\sin\left(\frac{1}{2}\right)x - 46x\cos\left(\frac{1}{2}\right)x + C$

D) $23\sin\left(\frac{1}{2}\right)x + 46x\cos\left(\frac{1}{2}\right)x + C$

4) B

5) $\int e^{2x}x^2\,dx$

A) $(1/2)x^2e^{2x} - (1/4)xe^{2x} + (1/4)e^{2x} + C$

B) $(1/2)x^2e^{2x} - (1/2)xe^{2x} + (1/4)e^{2x} + C$

C) $(1/2)x^2e^{2x} - (1/2)xe^{2x} + C$

D) $(1/2)x^2e^{2x} - xe^{2x} + (1/4)e^{2x} + C$

5) B

22/22

Activity 3.5: Areas and properties to Evaluate Definite Integrals

Name Ingrid Islas Vásquez ID A01570175 Date 23-01-18

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

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

$\Delta x = \frac{3-1}{4} = .5$

(.5) f(1) = 4
(.5) f(1.5) = 3.375
(.5) f(2) = 2.5
(.5) f(2.5) = 1.375
(.5) f(3) = 0

IZQ = 11.25 u^2
DER = 7.25 u^2

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

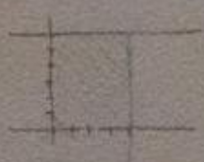
$\Delta x = \frac{2+1}{6} = .5$

(.5) f(-1) = .25
(.5) f(-.5) = .35
(.5) f(0) = .5
(.5) f(.5) = .7
(.5) f(1) = 1
(.5) f(1.5) = 1.41
(.5) f(2) = 2

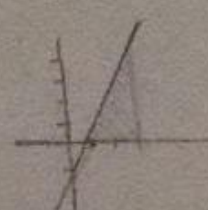
IZQ = 4.21 u^2
DER = 5.96 u^2

Give the graph of the region corresponding to the given definite integral and evaluate the integral using geometric formulas

3. $\int_0^4 6dx$ 24 u^2

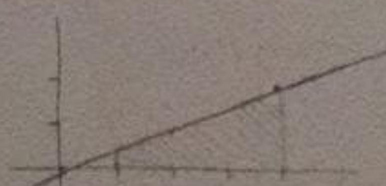


4. $\int_1^3 (2x-2)dx$ 4 u^2

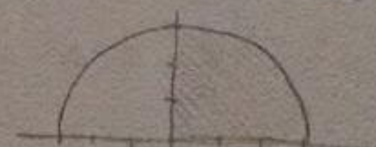


5. $\int_{-1}^1 (6-3x)dx$ 12 u^2

6. $\int_1^4 \frac{x}{2}dx$ 3.75 u^2



7. $\int_0^3 \sqrt{9-x^2}\,dx$ 2.25π u^2



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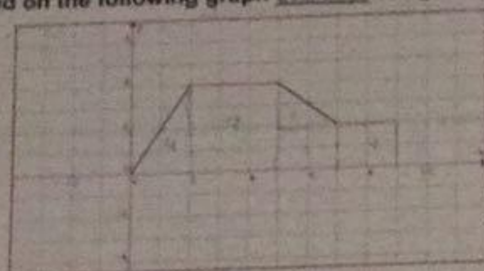
Based on the following graph evaluate the given definite integrals (ex: 8-13):



8. $\int f(x)dx$ 4 u² 9. $\int f(x)dx$ 16 u² 10. $\int f(x)dx + \int f(x)dx$ 18 u²

11. $2\int f(x)dx$ 20 u² 12. $\int f(x)dx$ 0 13. $\int f(x)dx$ −4 u²

Use the properties of the definite integrals and the given values to evaluate the integral

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

Find

14. $\int 6dx$ = 6 15. $\int 4xdx$ = 6 16. $\int (3x^2+1)dx$ = 8

17. $\int (3x^2 - 2x)dx$ = 4 18. $\int 6x^2 dx$ = 14

Use the properties of the definite integrals and the given values to evaluate the integral

Given: $\int f(x)dx = -2$ $\int g(x)dx = -5$ $\int f(x)dx = 6$ $\int g(x)dx = 3$

Find

19. $\int 3g(x)dx$ = 15 20. $\int f(x)dx$ = 0 ~~21. $\int f(x)dx$~~

22. $\int g(x)dx$ = −8 23. $\int [3f(x) - 2g(x)]dx$ = 28

This activity was very helpful at the beginning because every exercise is done in a different way so I could practice every type of integration and understand what it is asked.

Activity 2.15: Finding Particular Antiderivatives Using the Rules of Integration

Name Ingrid Islas Vásquez ID A01570175 Date ____________

Use the given condition to find the particular antiderivative

1. $f(x) = 10^{3x+2} + 3$ $\frac{10^{3x+2}}{2\ln 10} + 3x + 2.29$ $F(-1.5) = -2$ $= \frac{10^{3+2(-1.5)}}{2\ln 10} + 3(-1.5) + c$ $c = 2.29$

   $.21 - 4.5 + c = -2$

2. $g(x) = 18Cot(3x + \pi)$ $G(1) = -2 = 6\ln|Sin(3(1)+\pi)| + c$

   $6\ln|Sin(3x+\pi)| + 9.79$ $-2 + 11.79 = c = 9.79$

3. $f(x) = 5e^{2x}(e^{2x} - 5)^4$ $F(1) = 50 = \frac{(e^{2(1)}-5)^5}{2} + c$ $c = 11.08$

   $\frac{(e^{2x}-5)^5}{2} + 11.08$

4. $v(t) = \frac{-15e^{5/t}}{3t^2}$ $u = 5t^{-1}$ $du = -\frac{5}{t^2}$ $x(2) = 3 = \frac{-e^{5/2}}{15} + c$ $c = 3.81$ $\frac{-e^{5/t}}{15} + 3.81$

   $\frac{-e^{5/t}}{15}$

5. $f(x) = \frac{5}{2x - 3}$ $\frac{5}{2}\ln|2x-3| + 4$ $F(2) = 4 = \frac{5}{2}\ln|2(2)-3| + c$ $4 = 0 + c$

   $c = 4$

6. $v(t) = 3t^2Cos(t^3 + \pi)$ $\frac{1}{3}Sen(t^3+\pi) + 4$ $x_0 = 4 = \frac{1}{3}Sen(0^3+\pi) + c$ $c = 4$

7. $v(t) = 4t^2e^{-2t^3}$ $u = -2t^3$ $du = -6t^2$ $\frac{-2}{3}e^{-2t^3} + 4.66$ $x(0) = 4 = -\frac{2}{3}e^{-2(0)} + c$ $4 + \frac{2}{3} = c = 4.66$

8. $f(x) = 4Tan(6x)Sec(6x) + 6e^{2x}$ $F(0) = 5 = \frac{2}{3\,Cos\,6(0)} + 3e^{2(0)} + c$ $5 - .66 - 3 = c = 1.34$

   $\frac{2}{3}Sec\,6x + 3e^{2x} + 1.34$

9. $v(t) = \frac{12t^2}{e^{t^3}}$ $\frac{12}{4}t^2e^{-t^3}$ $u = -t^3$ $du = -3t^2$ $x(1) = -2 = \frac{-4}{e^{(1)^3}} + c$ $-2 + 1.47 = c = -.53$

   $\frac{-4}{e^{t^3}} - .53$

10. $h(x) = 96Sin^2(2x + \pi)Cos(2x + \pi)$ $H\left(\frac{5\pi}{12}\right) = 20 = 16(Sen\,2(\frac{5\pi}{12}) + \pi)^3 + c$

    $u = sin\,2x+\pi$

    $du = 2\cos 2x+\pi$

    $\frac{48\,Sen^3\,2x+\pi}{3} + c$ $16\,Sen^3\,2x+\pi + 22$

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11. $g(x) = \frac{8x}{2x^2+1}$ $2\ln|2x^2+1| + 4.8$ $G(1) = 7 = 2\ln|2(1)^2+1| + c$ $c = 4.8$

12. $v(t) = 5Sin\left(\frac{t}{2}\right)$ $-10\cos\left(\frac{t}{2}\right) - 7$ $x(2\pi) = 3 = -10\cos\left(\frac{2\pi}{2}\right) + c$

13. Find $f(x)$ if $f''(x) = 6x^2 + 5Cos(x)$, $f(0) = -1$ and $f'(0) = 5$ $\frac{x^4}{2} - 5\cos(x) + 5x + 4$

14. The velocity of a object in harmonic movement is described by $v(t) = 6Sec^2(2t + \frac{\pi}{2})$ in $cm/second$, and its known that when time is $\frac{\pi}{2}$ $seconds$ the position is 5cms.

Find the equation of the position of the object at any time t $t\left(\frac{\pi}{2}\right) = 5$

$3\tan\left(2t + \frac{\pi}{2}\right) + c$

15. The velocity of an object in harmonic movement is modeled by $v(t) = 8Cos^2(2t + \frac{\pi}{2})$ in $cm/second$, and its known that initial position is 10 cm. $x(0) = 10$

Find the equation of the position of the object at any time t.

$4\left(t + \frac{1}{4}\sin(4t + \pi)\right) + c$

$8\left(\cos\left(2t + \frac{\pi}{2}\right)\right)^2$

$8\int \frac{1}{2}\left(1 + \cos 2\left(2t + \frac{\pi}{2}\right)\right) dt$

$\frac{8}{2}\int 1 + \cos(4t + \pi)\, dt$

$4\left(t + \frac{1}{4}\sin(4t + \pi)\right) + c$

16. The velocity of a particle in movement is described by $v(t) = 6^{2t} + 2t$ in $cm/second$, and its known that its initial position is 3 cms.

a) Find the equation of the position of the particle at any time t. $\frac{6^{2t}}{2\ln 6} + t^2 + 2.72$

b) What is the position of the particle after 1 second 13.76

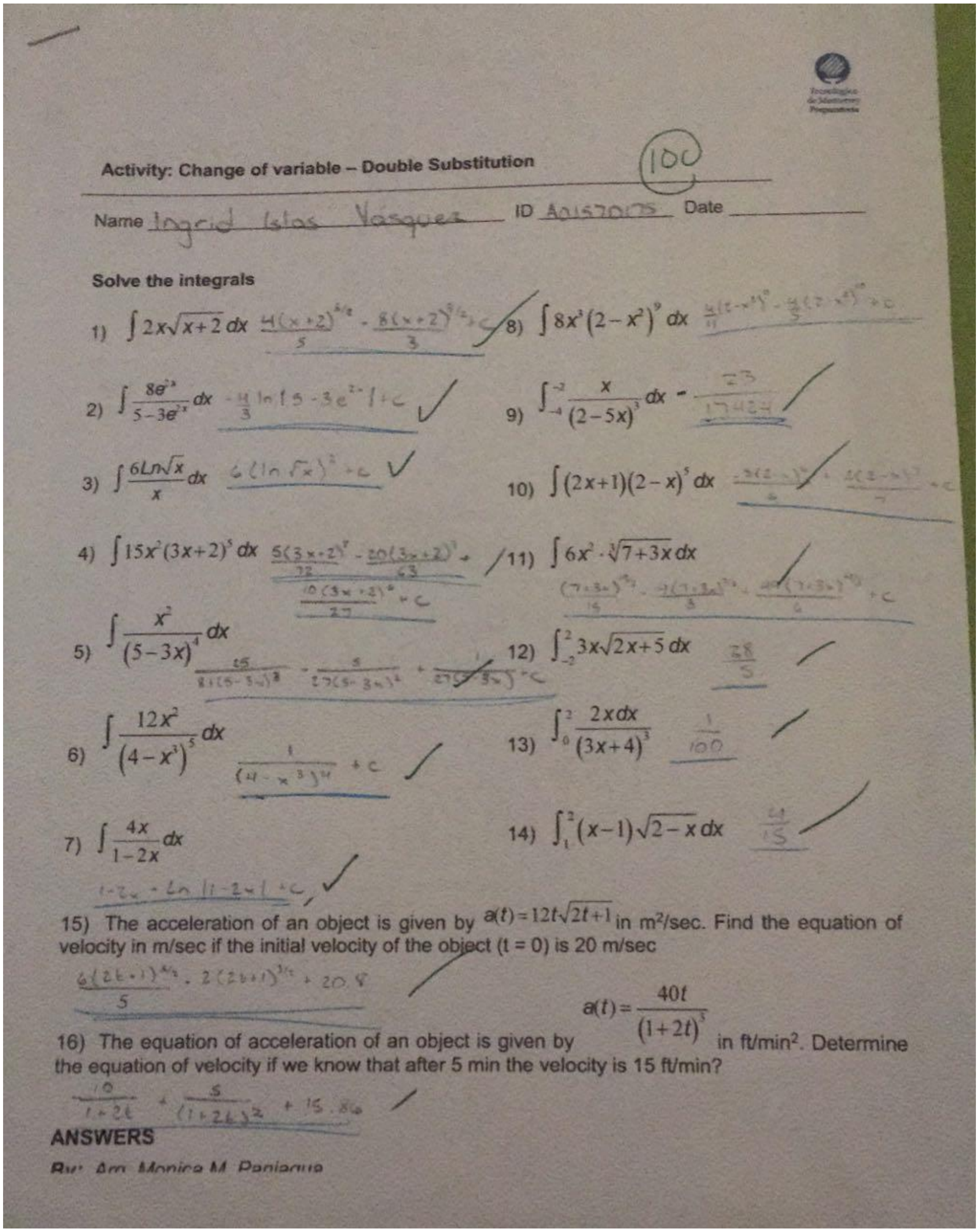
c) Find the acceleration of the particle after 1 second 131 $2 \cdot 6^{2t} \ln 6 + 2$

$x(0) = 3 = \frac{6^{2(0)}}{2\ln 6} + 0^2 + c$

17. Find the equation of velocity of an object given its acceleration $a(t) = \frac{1}{e^{2t}} + \frac{2}{t}$, knowing that $v(1) = 2\ m/sec$ $-\frac{1}{2e^{2t}} + 2\ln t + 2.06$

By: Arq. Monica M. Paniagua & Ing. Ziad Najjar

I found really helpful this type of activities: that have all the ways we learned for solving the problem, plus the thing that we had to find the particular antiderivative. Doing that was like a review and also, with the particular antiderivative, understand better how antiderivatives work.



Activity: Change of variable – Double Substitution 100

Name Ingrid Islas Vásquez ID A01570175 Date ____________

Solve the integrals

1) $\int 2x\sqrt{x+2}\,dx$ $\frac{4(x+2)^{5/2}}{5} - \frac{8(x+2)^{3/2}}{3} + c$

2) $\int \frac{8e^{2x}}{5-3e^{2x}}dx$ $-\frac{4}{3}\ln|5-3e^{2x}|+c$

3) $\int \frac{6Ln\sqrt{x}}{x}dx$ $6(\ln\sqrt{x})^2+c$

4) $\int 15x^2(3x+2)^5\,dx$ $\frac{5(3x+2)^8}{72} - \frac{20(3x+2)^7}{63} + \frac{10(3x+2)^6}{27} + c$

5) $\int \frac{x^2}{(5-3x)^4}dx$

6) $\int \frac{12x^2}{(4-x^3)^5}dx$ $\frac{1}{(4-x^3)^4}+c$

7) $\int \frac{4x}{1-2x}dx$ $1-2x - \ln|1-2x| + c$

8) $\int 8x^3(2-x^2)^9\,dx$

9) $\int_{-4}^{-2}\frac{x}{(2-5x)^3}dx$ $= -\frac{23}{17424}$

10) $\int (2x+1)(2-x)^5\,dx$

11) $\int 6x^2\cdot\sqrt[3]{7+3x}\,dx$

12) $\int_{-2}^{2} 3x\sqrt{2x+5}\,dx$ $\frac{28}{5}$

13) $\int_0^2 \frac{2x\,dx}{(3x+4)^3}$ $\frac{1}{100}$

14) $\int_1^2 (x-1)\sqrt{2-x}\,dx$ $\frac{4}{15}$

15) The acceleration of an object is given by $a(t)=12t\sqrt{2t+1}$ in m²/sec. Find the equation of velocity in m/sec if the initial velocity of the object (t = 0) is 20 m/sec

$\frac{6(2t+1)^{5/2}}{5} - 2(2t+1)^{3/2} + 20.8$

16) The equation of acceleration of an object is given by $a(t)=\frac{40t}{(1+2t)^3}$ in ft/min². Determine the equation of velocity if we know that after 5 min the velocity is 15 ft/min?

$-\frac{10}{1+2t} + \frac{5}{(1+2t)^2} + 15.86$

ANSWERS

By: Am. Monica M. Paniagua

And last but not least, this is another activity in form of a review, joining all the forms of antiderivatives we saw on the partial. Which until now has helped me so I don't forget or confuse the procedures.

CONCLUSION

I think I learned a lot this semester, even though it was a big general subject, we saw that things can be made in different ways, or that if you're missing something maybe you can use other data so you can solve the problem.