



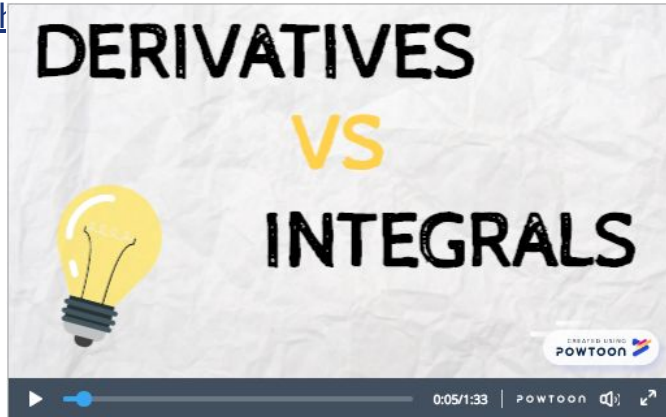
Eportfolio

Jasmin Salazar A01570234

Project 1st and 2nd partial

1st partial:

<https://www.powtoon.com/c/d9>



2nd partial:

100

Jasmin Salazar A01570234

Proyecto 2do Parcial: Movimiento de un móvil a lo largo de una trayectoria rectilínea y circular

Objetivo: _____

Determinar los conceptos básicos de un movimiento circular a partir de cálculo diferencial

Instrucciones:

En equipos de 2 personas realizarás la siguiente actividad

1. Leer detenidamente el caso práctico de un auto y el Expreso Tec que viajan sobre la Av. Paso de los Leones en dirección Pte.
2. Evaluar en base a los datos dados y usando cálculo diferencial el recorrido de la trayectoria rectilínea
3. Determinar las ecuaciones utilizando integrales y/o derivadas (conceptos vistos en clase) y los valores que se te piden
4. Determinar los valores que se te piden del movimiento rotacional del móvil
5. Compararlos con el límite de velocidad permitido en la zona.

Un auto está esperando el cambio de luz verde del semáforo, del cruce de Av. Paseo de los Leones y Calle Cima, cuando esto sucede, el carro empieza a moverse con una aceleración constante de 6.2 ft/s^2 . Un autobús Expreso Tec viaja en la misma dirección con una velocidad constante de 27 ft/s , sobrepasando al auto.

Para Cálculo II:

a) Determina la velocidad del auto cuando alcanza al autobús

Carro:	Autobus:
$A(t) = 6.2$	$V(t) = 27$
$V(t) = 6.2t$	$X(t) = 27t$
$X(t) = 6.2t^2/2 = 3.1t^2$	$A(t) = 0$

$3.1t^2 = 27t$	$v(t) = 6.2(8.71)$	$V(t) = 54.002 \text{ ft/s}$
$3.1t = 27$	$v(t) = 54.002 \text{ ft/s}$	
$t = 27/3.1$		
$t = 8.71 \text{ s}$		

Quiz 1.1

CALCULUS II
FIRST PARTIAL
QUIZ 1A

Name: Jasmin Sarwar ID#: 2015023 Date: 12/01/18

Answer the following problems with complete procedure.

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

$(3.04)^3$
 $a \cdot y \rightarrow x^3$
 $a \cdot y + 3x^2$

$x^3 + 3x^2(0.04)$
 $(3)^3 + 3(3)^2(0.04)$
 $= 28.08$

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

$f(x) = x^2 - 2x + 3$
 $f(0) = 0^2 - 2(0) + 3 = 3$
 $f'(x) = 2x - 2$
 $f'(0) = 2(0) - 2 = -2$

$y - y_1 = m(x - x_1)$
 $y - 3 = -2(x - 0)$
 $y = -2x + 3$

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

x^3
 $20^3 = 8000$
 $20 \cdot 0.1^3 = 8120.601$
 $8120.601 - 8000 = 120.601$

8000 ± 120.601

90
 94
 very good!

4. A can is going to be modified in such a way that its height will change from 14 cm to 14.5 cm but the diameter of the base will remain as 9 cm.

a) Find the change in the volume of the can (20 pts)

$(14) \pi 4.5^2 = 890.69$
 $(14.8) \pi 4.5^2 = 941.63$
 $941.63 - 890.69 = 50.94 \text{ cm}^3$

b) Find the approximate change in the volume of the can (20 pts)

$\Delta y = f'(x) dx$
 $(h) \pi r^2$
 $(2\pi r)(h) + (\pi r^2)$
 $(2\pi(4.5)(14) + \pi(4.5)^2) = 367.32$
 $367.32 \cdot 0.1 = 36.732$

BONUS

1. Brazil, Russia ✓ +A

2. Gus Gus, Jack ✓

QUIZ # 1.1

4 b) Find the approximate change in the volume of the can.

$\pi(4.5)^2(0.1) = 36.732 \text{ cm}^3$

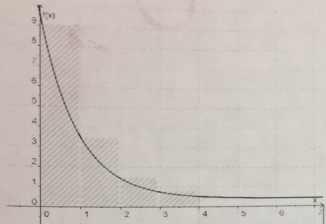
15 # 100

Quiz 1.2

Name Jasmin Salazar Román I.D. AO1570239 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.

(83)

-10

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

$\int_2^4 x dx = 9$ $\int_2^4 x^2 dx = 54$ $\int_2^4 dx = 7$

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

a) $\int_2^4 5x^3 dx + \int_2^4 4x dx + \int_2^4 6 dx$
 $5 \int_2^4 x^3 dx + 4 \int_2^4 x dx + 6 \int_2^4 1 dx$
 $270 + 36 + 42$
 b) $23 \int_2^4 1 dx = 23 \cdot 2 = 46$
 c) 0
 d) $\int_2^4 x dx - \int_2^4 9 dx = 10 - 18 = -8$

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)

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

$x = 0.5$

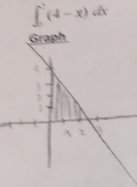
$(0.5) f(3) = 0$
 $(0.5) f(3.5) = +1.625$
 $(0.5) f(4) = -3.5$
 $(0.5) f(4.5) = -5.625$ } -10.75

$(0.5) f(5) = -8$ } -18.75

Area (Left hand) = $-10.75 \cdot 2 = -21.5$
 Area (Right hand) = $-18.75 \cdot 2 = -37.5$

3.25
7
1.25

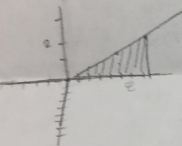
2) Give the graph (remember to shade the corresponding area) whose area is given by the following integral. Then use a geometric formula to evaluate the integral (by finding the area) (15 points each)



Procedure by geometric formulas

$\frac{b \cdot h}{2} = \frac{8}{2} = 4$

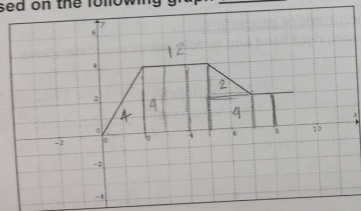
$\int_0^2 x dx$
3) Graph



Procedure by geometric formulas

$\frac{b \cdot h}{2} = \frac{8 \cdot 2}{2} = \frac{16}{2} = 8$

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



1. $\int_0^3 f(x) dx = 8 \cdot 2 = 16$

3. $\int_3^5 f(x) dx = 6 \cdot 2 = 12$

2. $\int_0^4 f(x) dx = -8 \cdot 2 = -16$

4. $\int_0^8 f(x) dx = 24 \cdot 2 = 48$

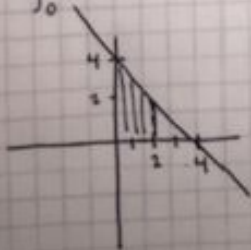
Quiz 1.2 corrections

QUIZ # 1.2

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.

2. Give the graph whose area is given by the following definite integral:

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


$\frac{bh}{2} = \frac{2(2)}{2} = 2$

$+ 2$

$l \times l = 2 \times 2 = 4$

6×2

Quiz 2.1

Prepa Tec
Campus Cumbres

GA
Calculus II
2nd partial Quiz #1A

Name: Jasmin Salazar Román I.D. AO510234 Date: 23/10/11

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 $\int \frac{\csc(3x)}{\sin(3x)} dx$ is $-2 \cot(3x) + C$
*u = 3x, du = 3, 1/2 * (x^2+3)^2 = (x^2+3)^2/2*
3. (T) $\int x(x^2+3)^2 dx = \frac{1}{6}(x^2+3)^3 + C$
4. (F) $\int (x^2-3) \tan(x^2-3x) dx = -\ln|\cos(x^2-3x)| + C$
5. (F) The integral of $\int (2 \sin 3x + 3x) dx$ is $-6 \sin 3x + 3x + C$

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'.

$$v(t) = \frac{1}{3} \ln|t-4| + C$$

$$v(5) = \frac{1}{3} \ln|5-4| + C = 8$$

$$8 = \frac{1}{3} \ln|5-4| + C$$

$$8 = C$$

$$v(t) = \frac{1}{3} \ln|t-4| + 8$$

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

1. $h(x) = 96 \sin^2(2x+\pi) \cos(2x+\pi)$
 $u = 2x+\pi$
 $du = 2$
 $H(x) = \frac{1}{48} \sin(2x+\pi)^2 \cos(2x+\pi) + C$
 $H(x) = \frac{1}{48} \frac{-\cos(2x+\pi)^3}{3} \sin(2x+\pi) + C$
 $H(x) = \frac{-\cos(2x+\pi)^3}{144} \sin(2x+\pi) + C$

$$2. v(t) = \frac{e^t}{3t^2} \quad u = \frac{e^t}{3}$$

$$v(t) = e^{5/e} (3e^{-2})$$

$$v(t) = 5e^{5/e} \frac{3e^{-1}}{-1}$$

$$v(t) = 5e^{5/e} \left(-\frac{3}{e}\right)$$

$$v(t) = 5e^{5/e} \cdot \left(-\frac{3}{e}\right)$$

8

$$3. \int 3x \cos(6x^2-1) \sin(6x^2-1) dx$$

$$u = 6x^2-1$$

$$du = 12x$$

$$\frac{1}{4} \ln|\sin(6x^2-1)| - \cos(6x^2-1)$$

8

$$\frac{\cos}{\sin} \sin = \int \cos dx$$

$$4. \int 7 \sec(3x) \tan(3x) dx$$

$$u = 3x$$

$$du = 3$$

$$\left(\frac{3}{7}\right) \sec(3x) + C$$

10

BONUS:

1. Patinaje artístico
2. 121-114

Quiz 2.1 corrections



Quiz 2.2

Prepa Tec
Calculus II

65

Campus Cumbres
2^o partial Quiz # 2A

Name: Jasmin Salazar Román I.D. 001570234 March, 2018

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

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

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

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

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

$$-\cos(2x) - \sin(2x) \cos(2x)^2$$

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

$u = \cos(2x)$
 $du = -2 \sin(2x) dx$

15

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

$u = x^7$
 $du = 7x^6 dx$

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

$$\frac{1}{28} \int (1 + \cos(2x^7)) dx$$

$$\frac{1}{28} \left(x^7 + \sin(2x^7) \right) + C$$

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

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

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

$$\frac{1}{2} \int x^6 + x^6 \cos(2x^7) dx \quad 14 \times 6$$

$$\frac{1}{28} \int x^6 + \frac{1}{14} \cos(2x^7) dx$$

$$\frac{1}{28}$$

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

$u = x^5$
 $du = 5x^4 dx$

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

$$\frac{9}{5} \int \tan(x^5) (\sec^2(x^5) - 1) dx$$

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

$$\int \tan(x^5) - \ln|\cos(x^5)| + C$$

$$\left(\frac{9}{5} \frac{\tan^2(x^5)}{2} - \ln|\cos(x^5)| \right) + C$$

15

MacBook Pro

4. $\int x^3 \sin^2(x^4) dx$

$u = x^4$
 $du = 4x^3 dx$

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

$$\frac{1}{2} \int (1 - \cos(2x^4)) dx$$

$$\frac{1}{8} \int 1 - \cos(2x^4) dx$$

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

10

5. $\int \cos^2(5x) dx$

$$\int \frac{1 + \cos(2x)}{2} dx$$

$$\frac{1}{2} \int 1 + \cos(2x) dx$$

$$\frac{1}{2} \left(x + \frac{\sin(2x)}{2} \right) + C$$

$$\frac{1}{2} \left(x + \frac{\sin(2x)}{2} \right) + C$$

15

BONUS (8 POINTS)

$\int \cos^3(3x) dx$

$$\int \cos^2(3x) \cos(3x) dx$$

$$\int (\sin^2(3x) + 1) \cos(3x) dx \quad \frac{1}{2} (1 + \cos(6x))$$

$$\int \sin^2(3x) \cos(3x) - \cos(3x) dx$$

$$\int \frac{\sin^3(3x)}{3} - \sin(3x) dx \quad \frac{1}{6} \sin(6x)$$

$$\left(\frac{\sin^3(3x)}{6} - \frac{\sin(3x)}{2} \right) \left(x + \frac{1}{12} \sin(6x) \right) + C$$

QUIZ 2.2 corrections



Quiz 3.1

Prepa Tec Campus Cumbres
Calculus II

3rd partial Quiz # 1B

Name Jasmin Salazar Román

I.D. NO1570234 April, 2018

$$\frac{2(2x-3)^{5/2}}{5} + \frac{2(2x-3)^{3/2}}{3}$$

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

5/1

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

$$du = 2x + 1$$

$$\frac{1}{4} \int \frac{(x^2+x)^4}{1} dx$$

$$\int \frac{u^{5/2}}{5/2} + \frac{3u^{3/2}}{3/2}$$

T

2. The integral of $\int 4x\sqrt{2x-3} dx$ is $(2x-3)^{3/2} + (2x-3)^{5/2} + C$

$$\int 4x(2x-3)^{1/2}$$

$$u = 2x-3 \quad x = \frac{u+3}{2}$$

$$du = 2 dx \quad dx = du/2$$

$$\int 2(u+3)(u)^{1/2} du$$

$$\int u^{3/2} + 3u^{1/2}$$

T

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

$$x(3x^2+4x-4) \times (3x^2+4x-4)$$

$$(3x-2)(x+2)$$

$$3x^2+6x-2x-4$$

$$x^2+26x+12$$

$$\int \frac{x^2+26x+12}{5x^3+3x^2} dx \text{ is } -\frac{9}{5} \ln|5x+3| + 2 \ln|x| - \frac{4}{x} + C$$

$$du = 15x^2 + 6x$$

F T

F T

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

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

$$(x-4)(x+2)$$

$$\int \frac{3x^3 - 25x^2 - 2x + 11}{x^2 - 5x - 14} dx$$

:(

8

$$x^2 - 2x - 8 \overline{) 2x^3 - 4x^2 - 15x + 5}$$

$$\underline{-2x^3 + 4x^2 + 16x}$$

$$0 \quad 0 \quad -x + 5$$

$$\int \frac{2x}{x+5} dx =$$



Quiz 3.2

Activity 1

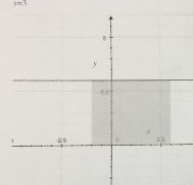
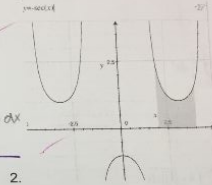
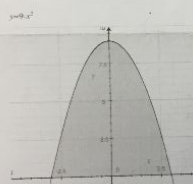
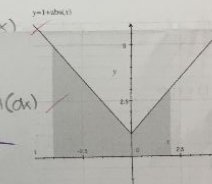
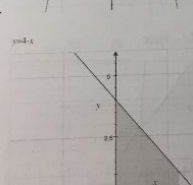
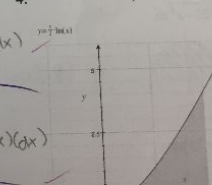
This activity was important for me because was the first activity in the semester that i really like and understood completely since the beginning.

18/13

Activity 3.4: Using Geometric Areas to Evaluate Definite Integrals

Name JASMIN SAICHAN ID 201570231 Date 19/11/18

For each of the following graphs give the interval that yields the area of the region shown on the graph

- 
$$1. \int_0^2 3 dx$$
- 
$$2. \int_{-1}^1 -\sec(x) dx$$
- 
$$3. \int_0^3 9-x^2 dx$$
- 
$$4. \int_{-1}^2 1+abs(x) dx$$
- 
$$5. \int_0^4 4-x dx$$
- 
$$6. \int_0^1 \frac{x}{2} \ln(x) dx$$

Ru: Am Mónica M. Danianus

Activity 1.04: Differentials - Applications

By: Arq. Monica M. Paniagua & Lic. Lucy Solis

Name Jasmin Salazar R. ID A01570331 Date 12/10/18

Use differentials and increments to solve the following

1. The cost of painting a spherical shaped storage tank is of \$15.00 per square meter. Determine the change in cost for painting the tank if the radius of the tank is reduced from 3m to 2.25m. (Hint: Surface of a sphere $S = 4\pi \cdot r^2$)

$$S_1 = 4\pi r^2 = 4\pi (3)^2 = 36\pi = [113.097] (15) = \$1696.46$$

$$S_2 = 4\pi (2.25)^2 = 81/4 \pi = [63.617] (15) = 954.25$$

$$\Delta C = \$-742.21$$

2. The temperature of a coffee at room temperature, t minutes after it has been served, is given by $T = 82 - 4\sqrt{t}$, where T is being measured in $^{\circ}\text{C}$

a) Find the change in the temperature of the coffee when time goes from 7 min to 8 min ΔT

b) Find the approximate change for the temperature of the coffee for the same times given in a) dT

$$T_7 = 82 - 4\sqrt{7} = 71.41$$

$$T_8 = 82 - 4\sqrt{8} = 70.69$$

$$\Delta T = 70.69 - 71.41$$

$$\Delta T = -0.72$$

$$\Delta = -0.72^{\circ}\text{C}$$

$$T' = 82 - 4(t)^{-1/2} \quad dt = \frac{-2}{\sqrt{t}}$$

$$T' = -2(t)^{-1/2}$$

$$T' = \frac{-2}{\sqrt{t}}$$

$$dt = -0.75^{\circ}\text{C}$$

$$dt = \frac{-2}{\sqrt{t}} \cdot 1$$

3. A can is going to be modified in such a way that its height will change from 12cms to 12.5 cms but the diameter of the base will remain as 8cms $C = \pi r^2 \cdot h$

a) Find the change in the volume of the can

b) Find the approximate change in the volume of the can

$$C_1 = \pi (4)^2 \cdot 12 = 603.18$$

$$C_2 = \pi (4)^2 \cdot 12.5 = 628.31$$

$$\Delta C = 25.14 \text{ cm}^3$$

$$dv = \pi (4)^2 dh$$

$$dv = \pi (16) \cdot 0.5$$

$$dv = 25.13 \text{ cm}^3$$



Conclusion

During this semester I realized many things of myself, because when it started i thought that we wouldn't do anything and when we started i knew i was wrong. I really liked the first partial because I understood every activity and i got good grades on my quizzes. But when second partial started i didn't put as much effort as in first partial and my grades went down but i realized that if i ask and go to tutorials i could do it. I don't think that calculus II would help me in my career because i do not have that subject but is knowledge for my life.