

GROUP NAME: <u>CSC</u>	Student Names (First and Last)
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Date: <u>12/9/13</u>	Writer/Prep: <u>COURTNEY GRUBB</u>
Topics:	QC/Leader: <u>CORNEAL MONGHAI</u>

Instructions: test #3
#1

$$f(x) = x^3 - 9x$$

a) find all critical values

use first deriv to find where our critical points are

$$y_1 = x^3 - 9x$$

$$y_2 = nDeriv(y_1, x, x)$$

$$y = x^3 - 9x$$

$$y' = 3x^2 - 9 = 0$$

$$x^2 - 3 = 0$$

$$x = \pm\sqrt{3}$$

~~$x = 0$~~ $y_3 = 0$

Calc $\frac{d}{dx}$ Integrate

1.73 and -1.73

to get y' you input x into y_3

$$b) y_3 = nDeriv(y_2, x, x)$$

$$y'' = 6x$$

$$f''(1.73) = 10.38 \text{ positive}$$

concave UP MIN

$$x = \sqrt{3} \quad y'' = 6\sqrt{3} > 0 \text{ MIN}$$

$$f''(-1.73) = -10.38 \text{ negative}$$

concave down MAX

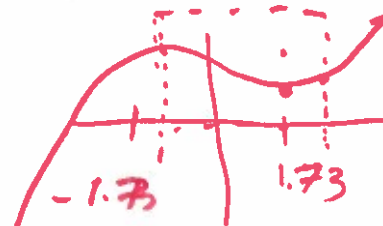
$$x = -\sqrt{3} \quad y''(-\sqrt{3}) = -6\sqrt{3} < 0 \text{ MAX}$$

c. We have no absolute max b/c we increase to ∞ and no min b/c we decrease to $-\infty$

$$[-1, 2]$$

$$\bullet \text{ Abs. Min.} = f(\sqrt{3}) = 3\sqrt{3} - 9\sqrt{3}$$

$$\text{Abs Max.} = f(-1) = 8$$



GROUP NAME:

Student Names (First and Last)

Logo:

Speaker/Presenter: ALVA

Date: _____

Writer/Prep: LOGAN

Topics:

QC/Leader: _____

Instructions:

TEST 3 # 2

Logan Callahan
Lopid

$$f(x) = x^3 - 9x$$

Increases at $(-\infty, -1.73) \cup (1.73, \infty)$

Increases from $-\infty$ to Max and Min to ∞

$$y'' = 6x = 0 \quad x = 0 \text{ Inflection Pt}$$

Concave up at $x \in (0, +\infty)$

Using 1st derivative from 0 to ∞ is

Concave up

inflection points $(0, 0)$

Graph of 2nd derivative intersect at $(0, 0)$

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter: <u>Angelika M.</u>
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Topics:	QC/Leader: <u>Eugene</u>

Instructions:

(3)

$$f(x) = 3x^3 - 8x^2 + 1000$$

Deriv $\rightarrow 9x^2 - 16x$

$$\left. \begin{array}{l} Y_1 = 3x^3 - 8x^2 + 1000 \\ Y_2 = 9x^2 - 16x \text{ (Deriv)} \end{array} \right\} \text{STEP-1}$$

$$\boxed{2nd \text{ Quit}} \quad \left. \right\} \text{STEP-2}$$

$$50 \xrightarrow{\text{STO}} x \quad \left. \right\} \text{STEP-3}$$

$$50 - Y_1(50) / Y_2(50) \quad \left. \right\} \text{STEP-4}$$

$$-6.149076626 \quad \left. \right\} \text{STEP-5}$$

Zero

Ans

50
33.59...
22.605...
15.15...
 END -6.149...

GROUP NAME: The Scientists

Student Names (First and Last)

Logo:

Speaker/Presenter: _____

Date: 12/19/13Writer/Prep: Darin Ciocobigan

Topics:

QC/Leader: _____

Instructions:

4)

Test #3

a) Find $s(t) = \int -10t + 50 = -10t^2/2 + 50t + C$

$$s(0) = -10(0)^2/2 + 50(0) + C$$

$$25 = 0 + 0 + C$$

$$C = 25$$

$$s(0) = -\frac{10t^2}{2} + 50t + 25$$

b) acceleration at $t=2$

$$v(t) = -10t + 50$$

$$a(t) = -10$$

$$a(2) = -10$$

c) mean value theorem to show that there is an acceleration of 10 between $t=0$ and $t=3$

$$-10(0) + 50 = 50$$

$$-10(2) + 50 = 30$$

$$v'(t) = \frac{v(2) - v(0)}{2 - 0} = \frac{30 - 50}{2} = \frac{-20}{2} = -10$$

GROUP NAME: <u>WOLFPAK</u>	Student Names (First and Last)
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Date: <u>DEC 9th</u>	Writer/Prep: <u>DC</u>
Topics:	QC/Leader: <u>Quay</u>

Instructions: TEST #3 Q#5

$$f(x) = 5x(x+1) + 2$$

a) $\text{sum}(\text{seq}(5x(x+1)+2), X, 0, 9.5, 0.5) * 0.5$
 1801.25

b) 2ND CALC

#7: $\int f(x) dx$

1936.6667

LOWER LIMIT = 0

UPPER LIMIT = 10

c) $\int_0^{10} [5x(x+1) + 2] dx = 1936.6667$

d) $y_1 = 5x(x+1) + 2$

2ND CALC

#7: $\int f(x) dx$

LOWER LIM = 0

UPPER LIM = 4

154.66667

From
Your
Project

GROUP NAME:

Student Names (First and Last)

Logo:

Speaker/Presenter: _____

Date: _____

Writer/Prep: Conner Kroysman

Topics:

QC/Leader: Bobby O'Conner

Instructions:

6

evaluate the integral

$$a) \int (3e^x + \tan x + x^{-1/2})$$

$$= -\sin x + 3e^x \left(\frac{\sin x}{\cos x} \right) \frac{x^{1/2}}{x^2}$$

$$3e^x + 2x^{1/2} + 5 \frac{dx}{4}$$

answer: $f(x) = 3e^x + 2x^{1/2} - \ln|\cos x| + C$

$$b) \int \frac{\sin(\ln(x))}{2x} dx$$

$$= \frac{-1}{10} x^2 (\cos(\log(x))) - 2$$

answer: $\frac{-1}{10} x^2 (\cos(\log(x))) - 2$

$$u = \ln(x)$$

$$du = \frac{1}{x} dx$$

$$\frac{1}{2} \int \sin(u) du$$

$$-\frac{1}{2} \cos(u) + C$$

$$-\frac{1}{2} \cos(\ln(x)) + C$$

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Speaker/Presenter: F. Pham

Date: _____

Writer/Prep: _____

Topics:

QC/Leader: _____

Instructions:

7

$$\int_0^3 x \sin(x^2) dx$$

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

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

$$u = x^2$$

$$du = 2x dx$$

$$\frac{du}{2} = x dx$$

$$\int_0^8 x \sin(x^2) dx$$

$$\int_0^9 \sin(u) \frac{du}{2}$$

$$-\frac{\cos(u)}{2} \Big|_0^9$$

$$-\left(\frac{\cos(9) - \cos(0)}{2} \right)$$

$$\frac{\cos(0) - \cos(9)}{2}$$