GROUP NAME: Date:_____	Student Names (First and Last) Speaker/Presenter: Kausalya Mannuru
Independant Variable (x-axis):_____ Dependant Variable (y-axis): _____	Writer/Prep:_____ Leader/Collaborator:_____
Conclusion (in words):	

#2

Supporting Work:

2. Given $f(x) = x^2 - 3x + 4$. Find the average rate of change over the interval $x=0$ and $x=2$. Also find the instantaneous rate of change at $x=1$.

To find the Average rate of change:

$$\frac{\Delta Y}{\Delta X} = \frac{f(2) - f(0)}{2-0} = \frac{2-4}{2} = \frac{-2}{2} = -1$$ ← Average rate of change

To find the instantaneous:

- Take derivative

$f(x) = x^2 - 3x + 4$

$f'(x) = 2x - 3$

$f'(1) = 2(1) - 3$

$2 - 3 = -1$ ← Instantaneous rate

GROUP NAME: Money Makers

Date: _____

Student Names (First and Last)

Speaker/Presenter: Bryce

Writer/Prep: Edna

Leader/Collaborator: Monica

Independant Variable (x-axis): _____

Dependant Variable (y-axis): _____

Conclusion (in words):

7. #~~8~~3

Supporting Work:

Definition of derivative: $\lim_{h\to 0} \frac{f(x+h)-f(x)}{h}$

$f(x) = x^2 - 3x + 4$ at $x = 1$

$= \lim_{h\to 0} \frac{(x^2 + 2hx + h^2 - 3x - 3h + 4) - x^2 + 3x - 4}{h}$

$= \lim_{h\to 0} \frac{2hx + h^2 - 3h}{h} \quad \frac{h(2x+h-3)}{h}$

$= \lim_{h\to 0} 2x + h - 3 \rightarrow 2x + 0 - 3 \rightarrow 2x - 3 = f'(x)$

when $x = 1$

$f'(1) = 2(1) - 3) = -1$

$f'(1) = -1$ using the definition of derivative

$\lim_{x\to 2} 3x + 4 = 10 \quad \epsilon = .01$

$|3x + 4 - 10| < .01$

$|3x - 6| < .01$

$3|x - 2| < .01$

$|x - 2| < \frac{.01}{3} = \delta$

$\delta = \frac{.01}{3}$ or .0033

GROUP NAME:

Date:_____

Student Names (First and Last)

Speaker/Presenter: Sharon Tsoe

Writer/Prep: Onur Turkan

Leader/Collaborator:_____

Independant Variable (x-axis):_____

Dependant Variable (y-axis): _____

Conclusion (in words):

~~#3~~ #4

Supporting Work:

(a) Find the equation of the tangent line at the point $x=9$ for $y=\sqrt{x}$

$y-y_1 = m(x-x_1)$

$y=\sqrt{9}$

$y=3$

$x=9$

point $(9,3)$

$y=\sqrt{x}$

$y=(x)^{1/2} \to 9$

$y'=\frac{1}{2}(x)^{-\frac{1}{2}} \Rightarrow \frac{1}{2}\cdot 3^{-1} \Rightarrow \frac{1}{6}$ $m=\frac{1}{6}$

$y'(9) = \frac{1}{2}9^{-1/2}$

$\frac{1}{2}-1=-\frac{1}{2}$

$y-3=\frac{1}{6}(x-9)$

$y=\frac{1}{6}(x-9)+3 \Rightarrow y=\frac{1}{6}(x-9)+3$

(b) Approximate $\sqrt{11}$ without a calculator

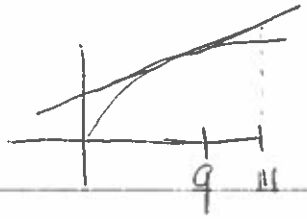
$y-3=\frac{1}{6}\cdot(11-9)$

$y-3=\frac{1}{6}(2)$

$y=\frac{2}{6}+3 \Rightarrow \frac{20}{6}=\frac{10}{3}$

$y=\frac{10}{3}$

$\Rightarrow 3.333$



GROUP NAME:

Date: 5/7/14

Student Names (First and Last)

Speaker/Presenter: Ryan Piotrowski

Writer/Prep: Bishop Bran

Leader/Collaborator: Dinyan

Independant Variable (x-axis):

Dependant Variable (y-axis):

Conclusion (in words):

?. #6

Supporting Work:

$$\lim_{x\to b}\frac{(x-a)(x-b)}{(x-a)(x-c)}=\frac{\cancel{(b-a)}(b-b)}{\cancel{(b-a)}(b-c)}=\frac{(b-b)}{(b-c)}=\frac{0}{(b-c)}=0$$

$$\lim_{x\to\infty}\frac{(x-a)(x-b)}{(x-a)(x-c)}=\frac{\infty}{\infty}$$ USE L'HOPITALS RULE?

$$\lim_{x\to\infty}\frac{x^2-ax-bx+ab}{x^2-ax-cx+ac}=\lim_{x\to\infty}\frac{2x-a-b}{2x-a-c}=\frac{\infty}{\infty}$$ USE L'HR

$$=\lim_{x\to\infty}\frac{2}{2}=1$$

$$\lim_{x\to a}\frac{\cancel{(x-a)}(x-b)}{\cancel{(x-a)}(x-c)}\overset{x=a}{=}\frac{(a-b)}{(a-c)}$$

GROUP NAME: Cha-Ching

Date: 5/7/14

Student Names (First and Last)

Speaker/Presenter: Trey Murrill

Writer/Prep: Sheila Mae Gan

Leader/Collaborator: Tatiana Calderon

Independant Variable (x-axis):

Dependant Variable (y-axis):

Conclusion (in words):

1, #6

Supporting Work:

6. Evaluate the limits

$\lim_{x\to 0^-} \frac{\sin(x)}{1-\cos(x)}$ (without a calculator) $= \frac{\sin(0)}{1-\cos(0)} = \frac{0}{1-1} = \frac{0}{0}$

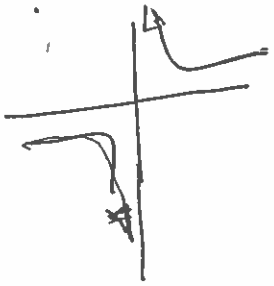
use L'Hopital's rule

$\lim_{x\to 0^-} \frac{\cos(x)}{\sin(x)} = \frac{1}{-0} = -\infty$

$\lim_{x\to 0^-} \frac{\sin(x)}{1-\cos(x)}$ with a calculator

$Y_1 = (\sin(X)) / (1-\cos(X))$

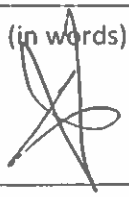
$Y_1 = \frac{\sin(x)}{1-\cos(x)}$ graph



Answer: $-\infty$

GROUP NAME:	Student Names (First and Last)
Date:_____	Speaker/Presenter: _____
Independant Variable (x-axis):_____	Writer/Prep:_____
Dependant Variable (y-axis): _____	Leader/Collaborator:_____

Conclusion (in words):



#7 Logarithmic Differentation.

Supporting Work:

$y = x^{\cos x}$

Log of Both Side $\ln y = \ln x^{\cos x}$

Bring down Cos. $\ln y = \cos x \ln x$

Differentiate. Implicitly.

$\frac{d}{dx} \ln y = \frac{d}{dx} \cos x \cdot \ln x$

Chain Rule $\frac{1}{y} \cdot \frac{dy}{dx} = \cos x \frac{1}{x} + \ln x \sin x$ Product Rule

Algebra $\frac{dy}{dx} = y\left(\frac{\cos x}{x} + \ln x \sin x\right)$

$\frac{dy}{dx} = x^{\cos x}\left(\frac{\cos x}{x} + \ln x \sin x\right)$

GROUP NAME:

Date:_____

Student Names (First and Last)

Speaker/Presenter: Yasmin Silverio

Writer/Prep: Cristina Trujillo

Independant Variable (x-axis):_____

Dependant Variable (y-axis): _____

Leader/Collaborator:_____

Conclusion (in words):

? #8

Supporting Work:

Quotient Rule

$$y = \frac{\cosh(x)}{x} = \frac{x \cdot \sinh(x) - \cosh(x) \cdot 1}{x^2}$$

$\frac{F}{g}$

$F = \cosh(x)$
$f' = \sinh(x)$
$g = x$
$g' = 1$

$$y = e^{\sin^{-1}(x)} = e^{\sin^{-1}(x)} \cdot \frac{1}{\sqrt{1-x^2}} = \frac{e^{\sin^{-1}(x)}}{\sqrt{1-x^2}}$$

Chain Rule

$$\frac{d}{dy} \sin^{-1}(x)$$

GROUP NAME: Date:_____	Student Names (First and Last) Speaker/Presenter: _____
Independant Variable (x-axis):_____ Dependant Variable (y-axis): _____	Writer/Prep:_____ Leader/Collaborator:_____

Conclusion (in words):

#19

Supporting Work:

$27 cc/sec = \frac{dV}{dt}$

$V = x^3$

$10 cm = x$

$\frac{dV}{dt} = 3x^2 \frac{dx}{dt}$

$(27) = 3(10)^2 \frac{dx}{dt}$

$\frac{dx}{dt} = \frac{27}{300} \text{ or } \frac{9}{100} \text{ or } .09 \text{ cm/s}$

GROUP NAME:

Date:

Independant Variable (x-axis):

Dependant Variable (y-axis):

Student Names (First and Last)

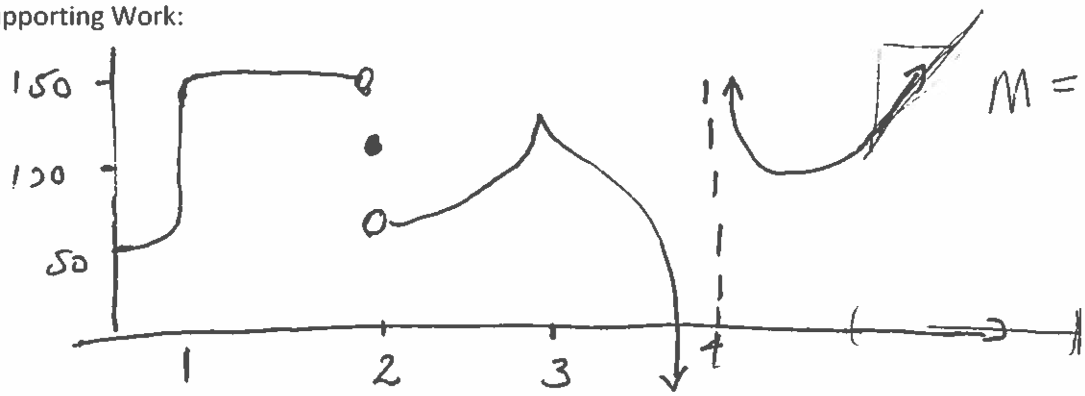
Speaker/Presenter:

Writer/Prep: [illegible]

Leader/Collaborator: Danyan zhou

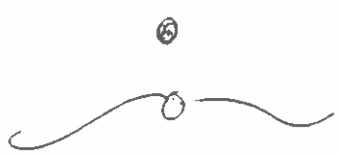
Conclusion (in words): #? #11

Supporting Work:



$$M = \frac{\Delta y}{\Delta x} = \frac{100}{1}$$

	x=1	x=2	x=3	x=4	x=∞
Contnious	Y	N	Y	N	Y
Diffrentiable	N	N	N	N	~~Y~~ (100)
Limit from the left	100	.150	100	-∞	+∞
Shape	Cusp	Gap (Jump) dis continuity	Corner	Assymptote	~~Parabola~~ line



tilde.

GROUP NAME: Money Makers

Date: _____

Student Names (First and Last)

Speaker/Presenter: Bryan S

Writer/Prep: Edna O

Leader/Collaborator: Monica K

Independant Variable (x-axis): _____

Dependant Variable (y-axis): _____

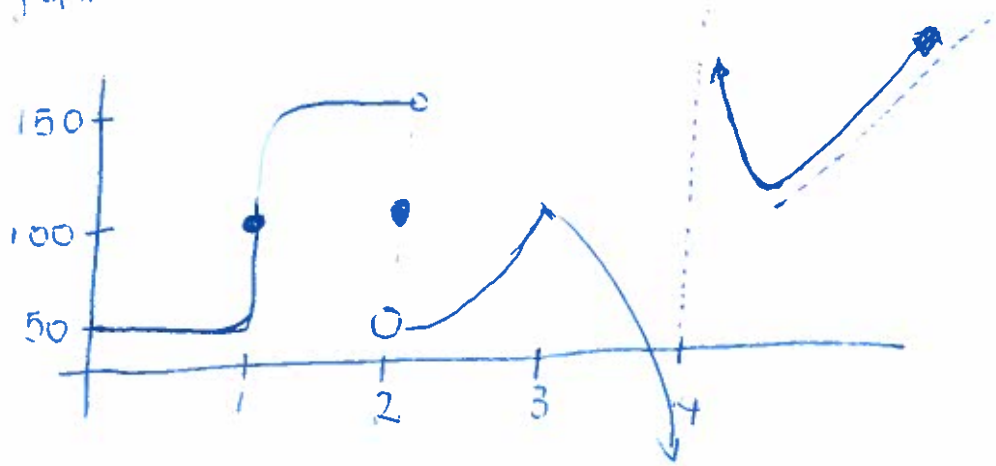
Conclusion (in words):

#12/13

Supporting Work:

	x = 1	x = 2	x = 3	x = 4	x = ∞
function is Continuous Y/N	Y	N	Y	N	Y
function is differentiable Y/N	N	N	N	N	Y (100)
Limit of value from left	150	150	100	-∞	+∞
Shape of graphs	Cusp	jump discontinuity	Corner	Vertical asymptote	Line increasing?

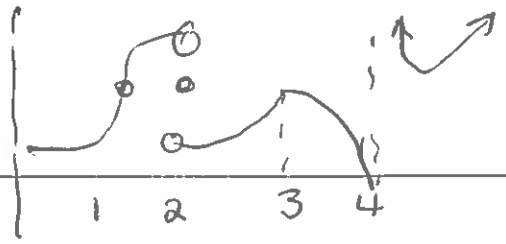
graph



GROUP NAME:	Student Names (First and Last)
Date:_____	Speaker/Presenter: _____
Independant Variable (x-axis):_____	Writer/Prep:_____
Dependant Variable (y-axis): _____	Leader/Collaborator:_____

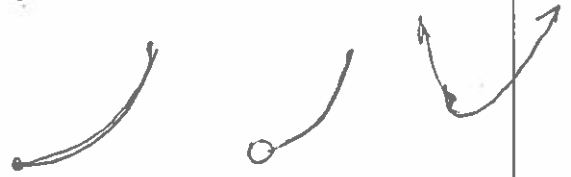
Conclusion (in words):

? #14



Supporting Work:

When is the function concave up?



$3 > x > 2$

$(0,1) \cup (2,3) \cup (4,\infty)$ 0—1 2—3 4.5—∞

Where is an inflection point?

$x = 3, 1$

Where are the extrema? $f'(x) = 0$

Critical pts
$f'(x) = 0$
or
$f'(x)$ DNE

$x = 3$ $x = 4.5$ $f'(4.5) = 0$

$f'(3) =$ UNDEF

When is the function decreasing and concave down?

$4 > x > 3$

$(3,4)$

GROUP NAME: TI Rates

Date: 05/07/14

Student Names (First and Last)

Speaker/Presenter: Sharon Isoe

Writer/Prep: Onur Turkan

Leader/Collaborator: Everyday we calculate

Independant Variable (x-axis): day

Dependant Variable (y-axis): time

Conclusion (in words): at .81772. there will be 0 time days left

#15

Supporting Work:

1. stat edit

Day x	Timey
	20
1	
2	40
3	10
4	70

2. STAT >> 6
cubic reg:

$=23.3\ldots x^3+(-165.x^2+351.66x-190$

$r^2 = 1$ ✓

NEWTONS METHOD

Y1= CubicReg

VARS 5 >> Eq:

Copy.

Sec ↑ QUIT

X - Y1 / nDeriv (Y1, x, x) - 1 - 2

Iteration: -2

Iteration: 02 7253

Iteration: .79318

Zero: .817722...

GROUP NAME:

Date:_____

Student Names (First and Last)

Speaker/Presenter: Vinnie Arhad

Writer/Prep: LAUREN DuBO

Leader/Collaborator: LAUREN DuBO

Independant Variable (x-axis):_____

Dependant Variable (y-axis): _____

Conclusion (in words):

#16

Supporting Work:

WHAT IS the Maximum of E if E=MC and M+2C=25? → M=25-2C

E=(25-2C)·C

M+2C=25

M=12.5

C=6.25

E=12.5(6.25)=78.125

$E = 25C - 2C^2$

$E' = 25 - 4C$

$=0$

$25 = 4C$

$\frac{25}{4} = C$

$6\frac{1}{4} = C$

M=25-2C

$25-2(6\frac{1}{4})$

$M = 12\frac{1}{2}$

$E = (12\frac{1}{2})(6\frac{1}{4}) = 78.125$