Change → Increase / Decrease / constant

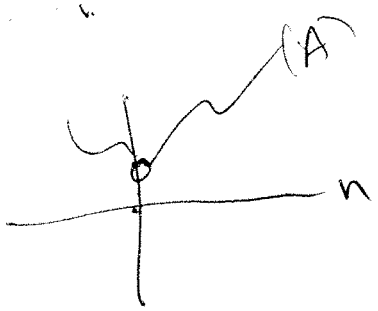
Rates of Change → Average → Need 2 Points.

Rates of Change → Instantaneous → AT 1 Point.

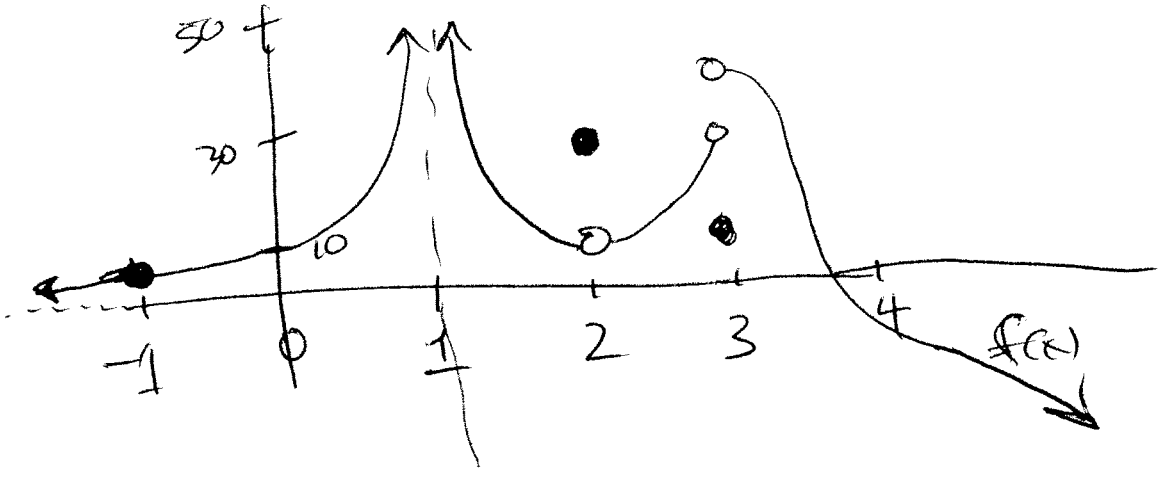
Limit

$$\lim_{h \to 0} \frac{f(x+h) - f(x)}{h} = \frac{\Delta Y}{\Delta X}$$

$$\lim_{n \to 0} \frac{n(A)}{n} = (A)$$



Picture



$\lim_{x \to 0} f(x) = 10$ $\quad f(0) = 10$

$\lim_{x \to 1} f(x) = \infty$

Doesn't matter
$f(2) = 30$

$\lim_{x \to 2} f(x) = 10$

$\lim_{x \to 3} f(x) = \text{DNE}$

$\lim_{x \to 3^+} f(x) = 40$

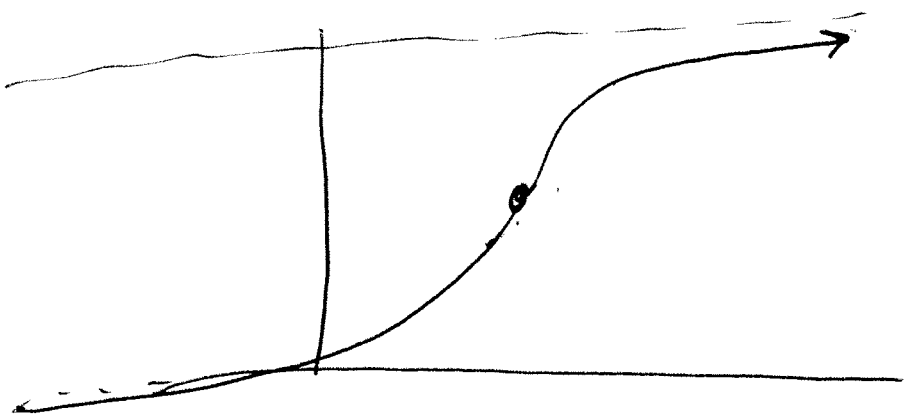
$\lim_{x \to 3^-} f(x) = 30$

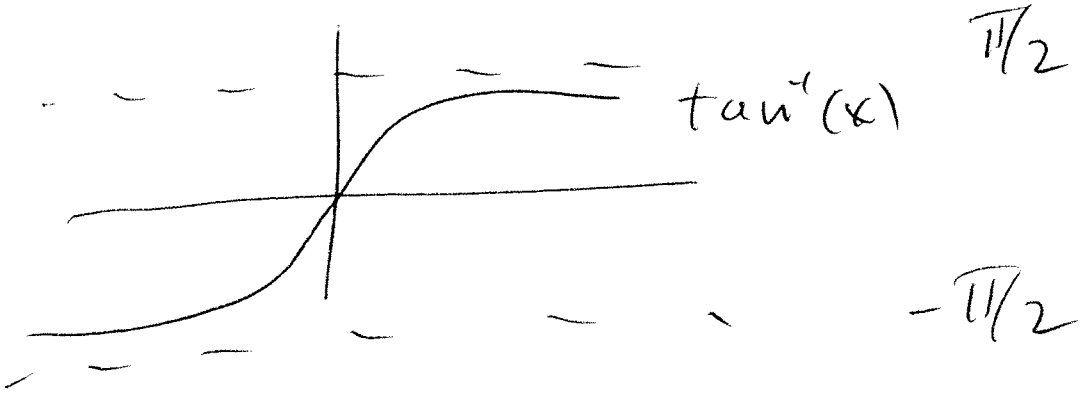
$\lim_{x \to -1^-} f(x) = 5$

$\lim_{x \to -\infty^+} f(x) = 0$ $\quad$ Left End Behavior

Note: $\lim_{x \to -\infty^-} f(x) = \text{DNE}$

$\lim_{x \to \infty} f(x) = -\infty$ $\quad$ Right End Behavior

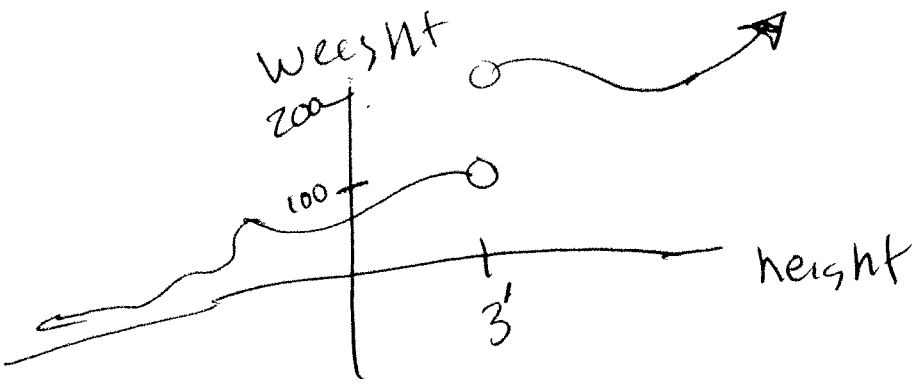




$\frac{1}{\infty}$ $\lim_{x \to \infty} \frac{1}{x} = 0$

$0 \cdot \infty$ $\lim_{x \to \infty} \frac{1}{x} \cdot 3x = \lim_{x \to \infty} 3 = 3$

$0 \cdot \infty$



$$\lim_{\text{height} \to -\infty} r(x) = 0$$

Left END

$$\lim_{\text{height} \to \infty} r(x) = \infty$$

Right END

As height goes to ∞, weight goes to ∞
" " " $-\infty$ " " 0

$$\lim_{h \to 3^-} r(x)$$

$$\lim_{h \to 3^+} r(x)$$

~~As height goes to 3~~

As a "short" person grows to 3' we expect them to weight 100 lb.
As a "tall" person shrink to 3' we expect them to weigh 200 lb.

GROUP NAME: Mathletes

Logo:

Date:

Topics:

Student Names (First and Last)

Speaker/Presenter: Kyle Inverso

Writer/Prep: Aidan Callahan

QC/Leader: Logan Hackenbury

Instructions:

x	y
1927	100
1937	92
1947	85
1957	72
1967	63
1977	51
1987	42

exponential regression

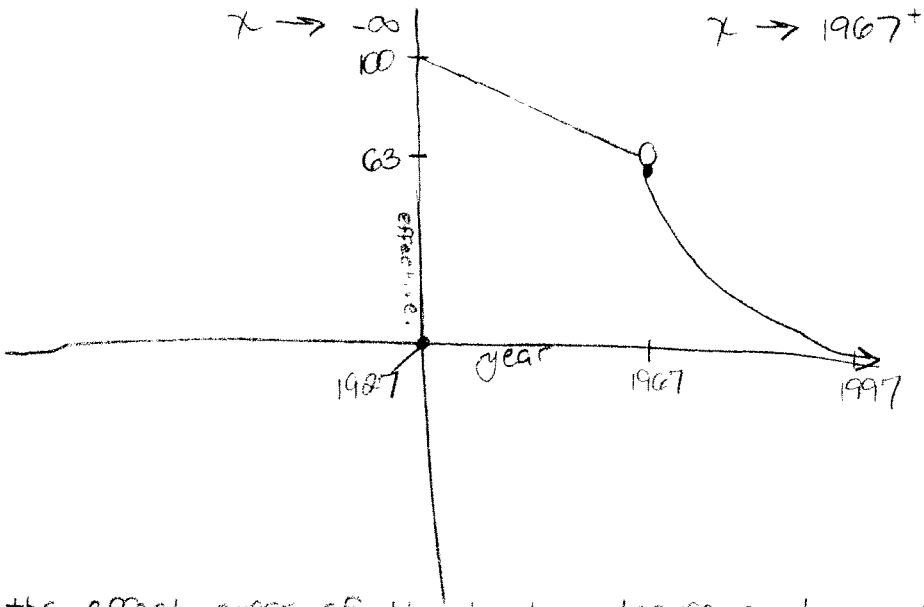
linear regression

limit $r(x) = 0$, $x \to \infty$

limit $r(x) = 58$, $x \to 1967^-$

limit $r(x) = 100$, $x \to -\infty$

limit $r(x) = 63$, $x \to 1967^+$



as time increases, the effectiveness of the bridge decreases to grade of 0.

as time decreases, the effectiveness of the bridge continues to increase above 100.

GROUP NAME: IRISH MATH! Bombs

Logo: 

Student Names (First and Last)

Speaker/Presenter: Connor Kuysman

Writer/Prep: Bobby O'connor

QC/Leader: The Real Bill Smith

Date:

Topics:

Instructions: Limits

meow.

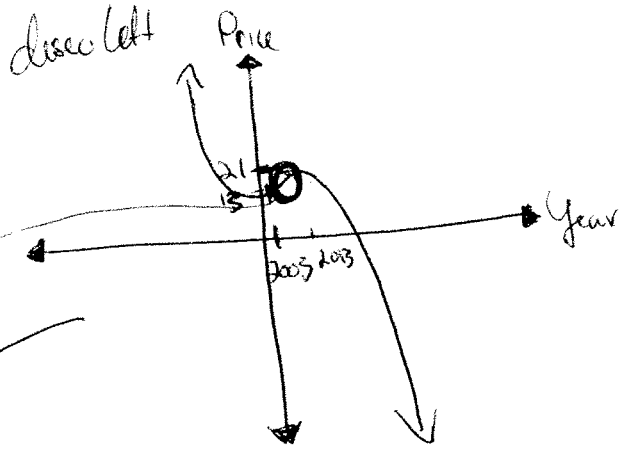
Year	Price
2003	13
2005	15
2007	16
2009	19
2011	20
2013	21

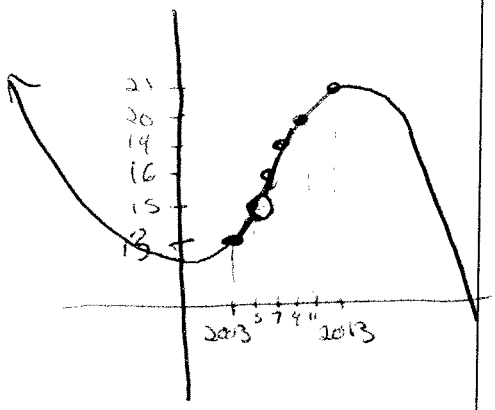
PBR PRICE OVER LAST 10 years

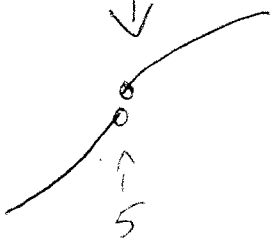
Limit ~~[illegible]~~ at

2005

Cubic & Quartic







$x \Rightarrow -\infty$

as we go BACK TO THE FUTUR

Left end behavior: ~~as x approaches -∞~~, the Price goes to ~~-∞~~ all the way up as "time goes on"

(in the immortal words of John Mellancamp)

Right end behavior: ~~as x approaches ∞~~, the Price goes to ~~zero~~ less than nothing

$x \Rightarrow \infty$

as Price → ~~2005~~ from the future, you'll spend $14.95

as Price → 2005 from past you'll spend $14.63

GROUP NAME: The factors	Student Names (First and Last)
Logo:	Speaker/Presenter: Ryan Bigley
Date: 9/4/13	Writer/Prep: Kevin Chang
Topics: Limits & End Behaviors	QC/Leader: Ethan Stewart

Instructions:

Δy

$f(x)$ — Δs time goes on the value will go to negative infinite

12 — 9 — 6 — 3 —

$/(x = 1975)$

$-\Delta s$ time goes back to 1975, it will go to infinite

1975 1980 1990 2000 years x

Time	
1960	2.5
1970	1.5
1980	3.5
1990	6.2
2000	9.2

— Right End Behavior $\lim_{x \to \alpha^+} f(x) =$

— left End Behavior

$f(x) = \alpha$

$x \to -\alpha'$

$\lim_{x \to 1975^-} f(x) = 2.27$

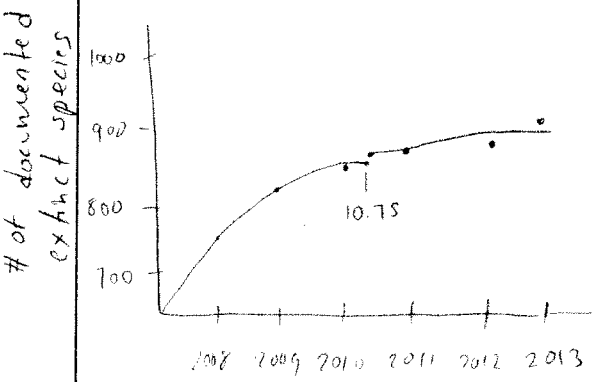
$\lim_{x \to 1975^-} x =$

$\lim_{x \to 1975^-} f(x) = 2.38744444972$ $

$\lim_{x \to 1975^+} f(x) = 2.38744444972$

GROUP NAME: The Scientists	Student Names (First and Last)
Logo:	Speaker/Presenter: Dorin Ciorotisan
Date: 9/4/13	Writer/Prep: Kiersten Hendricksen
Topics:	QC/Leader: [illegible]

Instructions: $\lim_{x \to} r(x)$



$\lim_{x \to -\infty} r(x) = -\infty$

$\lim_{x \to \infty} r(x) = \infty$

$\lim_{x \to 2010.75^+} r(x) = 869.45$

$\lim_{x \to 2010.75^-} r(x) = 856.22$

As we travel back in time, the # of documented extinct species goes to 0

As we travel into the future, the # of documented extinct species approaches ∞

As we go back 10.75^+ [cubic regression] (Fall of year 2010)^1, the # of documented species is 869.95

As we go forward 10.75^- (quadratic regression), the # of documented species is 856.22

GROUP NAME: Wolf Pack	Student Names (First and Last)
Logo:	Speaker/Presenter: Jared S.
Date: 9/4	Writer/Prep: Dominic C (DC)
Topics: Limits	QC/Leader: Quay

Instructions:

YEAR	SPEED
1996	14
1998	28
2001	56
* 2003	5000
2006	10000

* AS WE GO BACK TO THE BEGINING OF TIME SPEED GOES TO $-\infty$
* AS WE GO TO THE FUTURE SPEED GOES TO $+\infty$
* AS WE GET CLOSE TO 2003 FROM THE PAST SPEED GOES TO 3444 kbs
* AS WE GET CLOSE TO 2003 FROM THE FUTURE SPEED GOES TO 1318 kbs

PROF. PORTER

MATH CLASSWORK

GROUP NAME: Time Is Money

Logo: 

Student Names (First and Last)

Speaker/Presenter: Angelika Mazurek

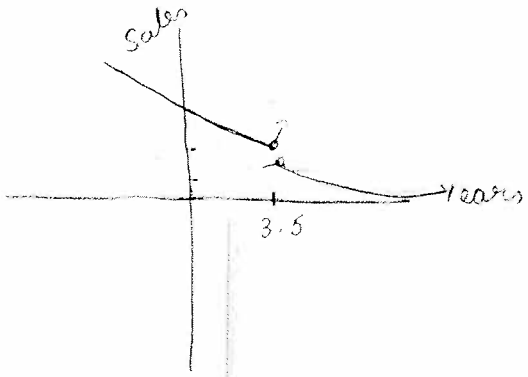
Writer/Prep: Shviam Singh (Shiv)

QC/Leader: Eugenio Pelaez

Date: 09/04/13

Topics:

Instructions: LIMITS



Left END $\lim_{Years \to -\infty} r(x) = \infty$

Right END $\lim_{Years \to \infty} r(x) = 0.$

As the time goes on to ∞ the price goes to 0.

As the time goes back to $-\infty$ the price goes to ∞ (increases)

$\lim_{Years \to 3.5^-} r(x) = 394.05$

$\lim_{Years \to 3.5^+} r(x) = 349.6$

As the time goes back to 3.5^- we expect the price to be \$ 394.05 (Rise)

As the times goes on to 3.5 we expect the price to be \$ 349.5 (fall)

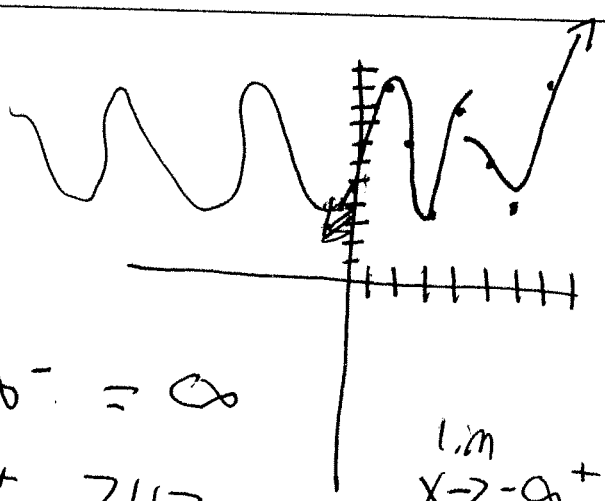
GROUP NAME: apples 2 apples
Logo:

Student Names (First and Last)
Speaker/Presenter: Steve H
Writer/Prep: Thomas Y
QC/Leader: Anna S

Date: 9/04/13
Topics:

Instructions: Find limits approaching break & H asymptope

day	sleep
1	10
2	7
3	4
4	9
5	6.5
6	4.5
7	11



$\lim_{x \to 0^-} = \infty$

$\lim_{x \to 4^+}$ 7.47

$\lim_{x \to 4^-}$ 10.03

$\lim_{x \to -\infty^+}$ DNE

as we go further into the future sleep approaches infinity

as we approach day 4 from the left sleep is 10.03

approaching day 4 from the right sleep is 7.47

GROUP NAME: CSC

Logo:

Date: 09/04/13

Topics:

Student Names (First and Last)

Speaker/Presenter: Carrie Vaughn

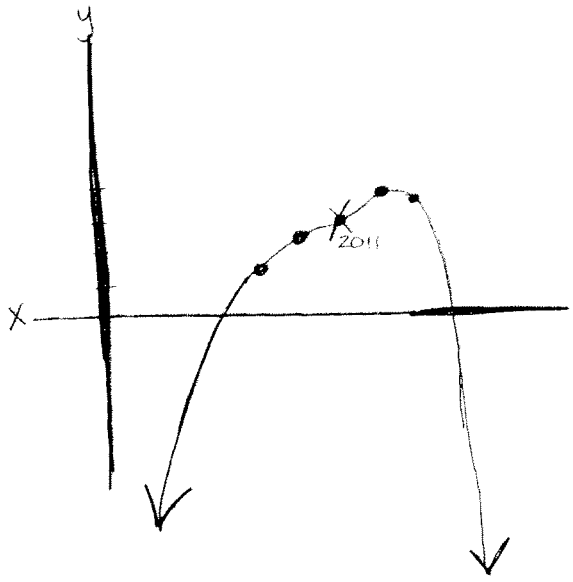
Writer/Prep: Courtney Grupp

QC/Leader: Stephen Smith

Instructions:

Apple Stock Prices

yr.	$ Price
09	211.98
10	336.12
	405.00
	532.17
13	501.02



X=2011 y=433.3

as x approaches ∞ $f(x) = -\infty$

as x approaches $-\infty$ $f(x) = \infty$

> as the years go by the stock decreases to nothing!

as the years approach to 2011 the stock will amount to nothing