Midterm Fall 2012 Fri/Sat #5 Answers for class PreCalculus / Mat146
SPRING 2013

1.

(a) The function f is decreasing over which intervals? Choose all that apply.

$(-\infty,-9)$ $(-6,-2)$ $(2,6)$ $(9,\infty)$

(b) The function f has local minima at which x-values? If there is more than one value, separate them with commas.

$-9, -2, 6$

(c) What is the sign of the leading coefficient of f?

Negative

Disco Left

(d) Which of the following is a possibility for the degree of f? Choose all that apply.

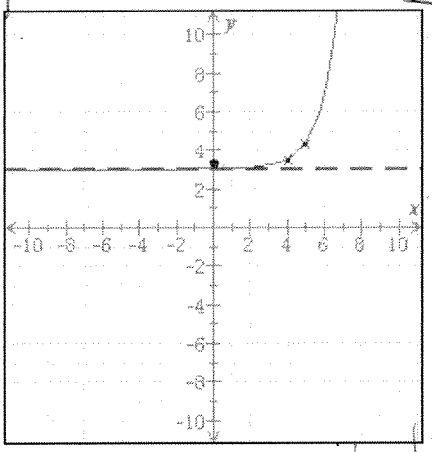
7 9

5, 7, 9 Disco
Not 5 7 Paces

2. $f(x) = \dfrac{(x-4)(x+2)}{(x-1)(x-3)}$

$\dfrac{2(x-2)(x+1)}{(x-5)(x+6)}$

3.



$y = 3$

$y_{INT}\ (x=0)$

$\frac{1}{2}e^{-4} + 3$

$3.00915\ldots$

$(0, 3.009\ldots)$

Zeros $-1, 2$

Factors $(x+1)(x-2)$ ← Num.

V.A $-6, 5$

Fact $(x+6)(x-5)$ ← Den

4. 4.50 % per year

5. $x = -1.86$

6. Domain: $(-\infty,-2) \cup (2,\infty)$

~~5375.24~~

5387.42

$4000\left(1+\frac{.03}{2}\right)^{2\cdot 10}$

#14

$P = Qe^{RT}$ method: solver $0 = P - Qe^{R(RT)}$

$P = 2356$

$Q = 1800$

$R = ?.045\ldots$ 4.5% Kalpha Center

$T = 10$

HA. $y = 2$

$\ln\dfrac{(x+1)(x-2)}{(x+6)(x-5)}$

LD

$$\frac{2358}{1800} = \frac{1800e^{6R}}{1800}$$

$$1.31 = e^{6R}$$

Prop 1

$$6R = \log_e 1.31$$

$$6R = \ln(1.31)$$

$$R = \frac{\ln(1.31)}{6} = .04560\ldots$$

4.5%

#5 $\frac{3\ln((x+2))}{3} = \frac{-6}{3}$

$$\ln_e(x+2) = -2$$

Prop 1

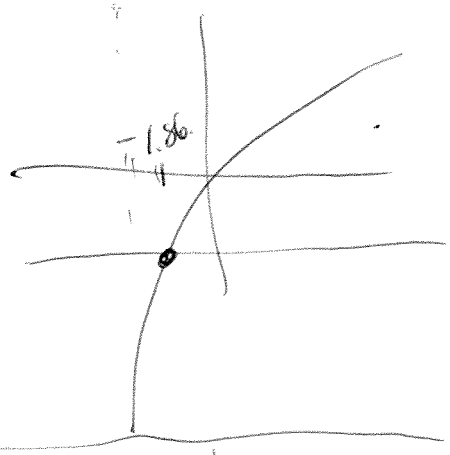
$$e^{-2} = x+2$$

$$-2+e^{-2} = x$$

$-1.86\ldots$

$Y_1 = 3\ln(x+2)$

$Y_2 = -6$



Math 0: solver

$0 = 3\ln(x+2)+6$

$x =$

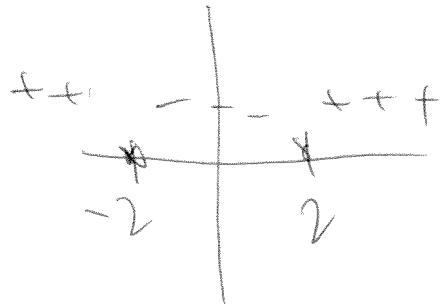
Domain

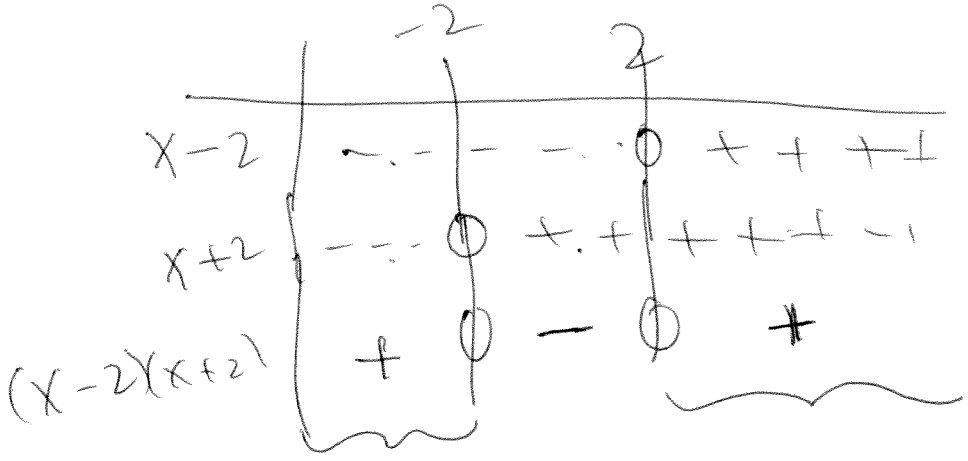
$\log_2(x^2-4)$:

Logs don't eat "0" or "−"

Find $x^2-4>0$

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

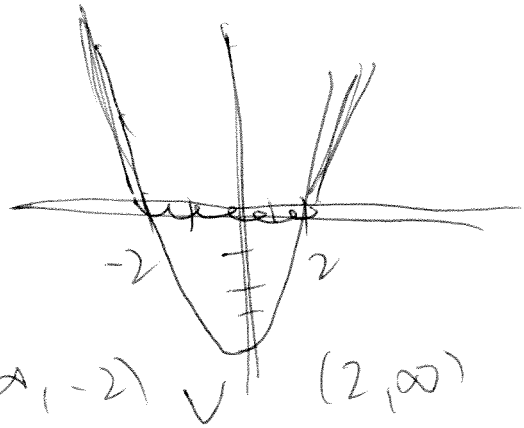




$(-\infty, -2) \cup (2, \infty)$

Graph

$y = x^2 - 4$



$(-\infty, -2) \cup (2, \infty)$

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter: Kayla
Date:	Writer/Prep: Sabella
Topics:	QC/Leader:

Instructions:

#8

L1 Year	L2 Sales in billions
1	3
3	4
5	9

Stat 1: edit
enter data

Stat > calc.
0: Exp. Reg
$y = a(b^x)$

exp function:
$y = 2.09...(1.32...)^x$ $Y_1 =$ [VARS] 5: Statistics EQ
Reg EQ

[2nd] graph (table)

make sure calc is on "ask"
[2nd] table set: independent (ask)

plug in $X = 10$ (for x value)

X	Y
10	32.56b

Evaluate

Answer:
$\approx$ 32.6 million

When will sales reach 8 million? $\Rightarrow$ [Y=] $y_2 = 8$
Stat > calc 4: LnReg. paste equation via VARS > EQ > Reg EQ
Calc: 5: Intersect (enter) (enter) (enter)
$= 4.88...$

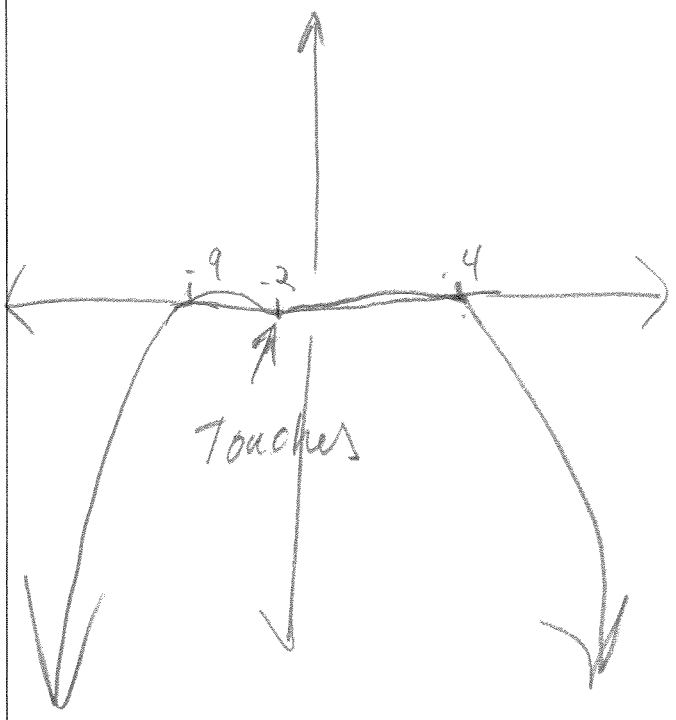
Answer: 4.88

SOLVE

GROUP NAME: TEAM Brotein Logo: 	Student Names (First and Last) Speaker/Presenter: Rob
Date: today	Writer/Prep: Bob
Topics: AIDS	QC/Leader: Con on the Cobb

Instructions: Do It #9

Given $f(x) = -540(x+9)(x-4)(x+2)^4$.

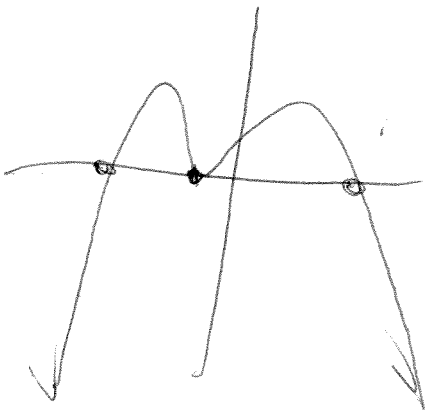


(A) at -2 because degree is even

(B) -9 & 4 because degree is odd

(C) 6 because there are 6 x's

(D) no because all zeros ~~are even as positive #'s~~ come in pairs



GROUP NAME: Team Awesome	Student Names (First and Last)
Logo:	Speaker/Presenter: William
Date:	Writer/Prep: Quay
Topics:	QC/Leader: Mike T

Instructions:

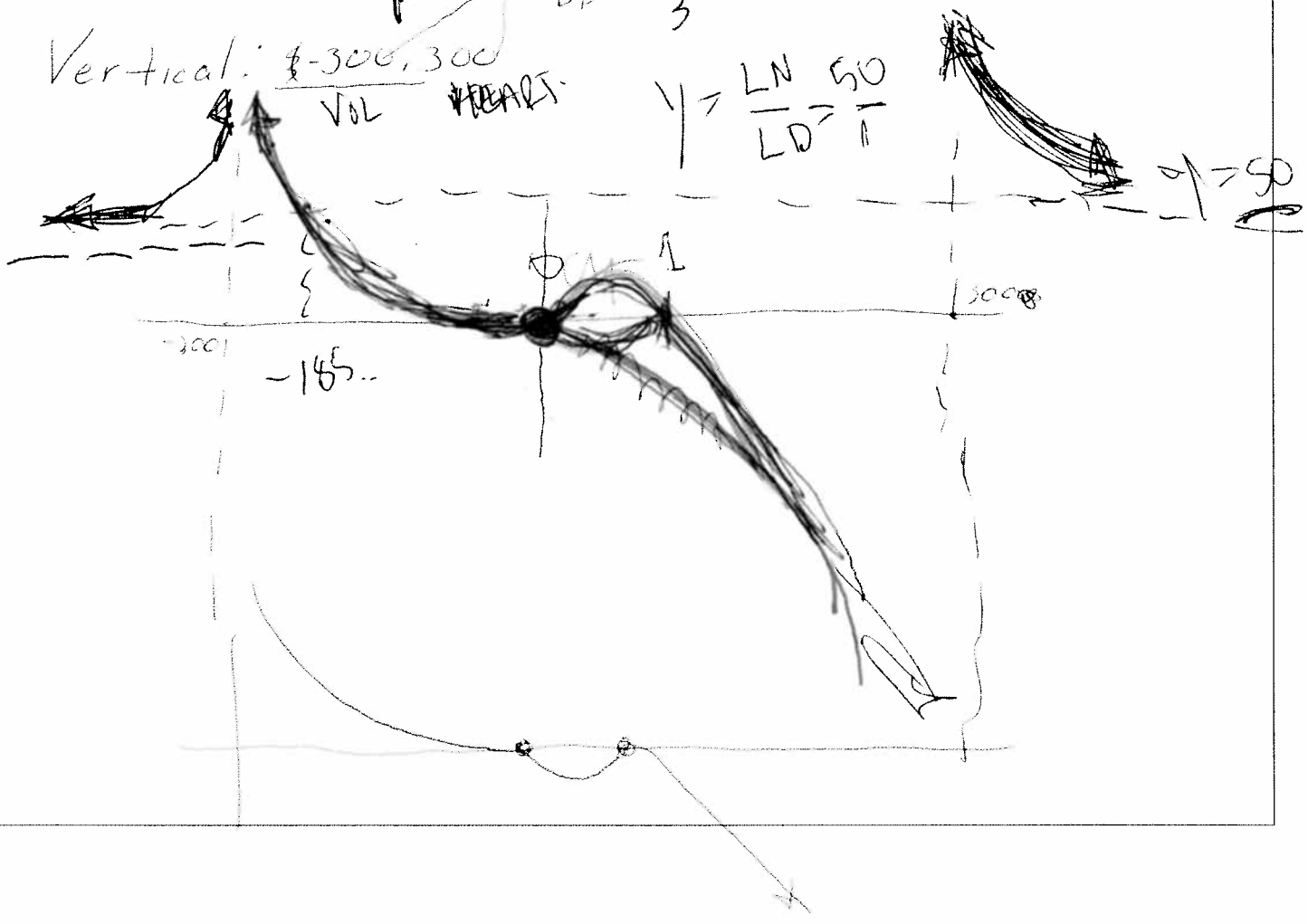
#10

$$S = \frac{50x(x-1)^2}{(x-300)(x+300)^2}$$

Zeros: 0, 1
passes through: (0, 0)
touches: (1, 0)

Horizontal: ~~Y=50~~ None $\frac{DN}{DP} = \frac{2}{3}$

Vertical: $x = -300, 300$ VOL



GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter: Riya
Date: 05/14/13	Writer/Prep: Courtney
Topics:	QC/Leader: Trey

Instructions: #11

$\log_3(x)+\log_3(x-1)=2\log_3(5)$.

prop 2 product sum

$\log_3((x)(x-1))=2\log_3(5^2)$

prop 3 ladder

$\log_3((x)(x-1))=\log_3(5^2)$

$\frac{\log_3((x)(x-1))}{\log e}=\frac{\log_3(5^2)}{\log e}$

prop 4 change of base

$\ln((x)(x-1))=\ln(5^2)$

prop 5

$(x)(x-1)=25$ which answer makes sense? why?

$x=-4.52$, 5.52 log can't take a log of a negative #

5.52

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter: Corneal Douglas
Date:	Writer/Prep: Troy
Topics:	QC/Leader: Corneal

Instructions: #12

12. ← Inpat into calc

$\sin\left(\frac{5\pi}{4}\right) = -.707$ Sin (5π/4)

$\cos\left(\frac{5\pi}{4}\right) = -.707$

$\tan\left(\frac{5\pi}{4}\right) = 1$

Inpat in calc to get your answer

$\sec\left(\frac{5\pi}{4}\right) = -1.41 = \frac{1}{\sin\left(\frac{5\pi}{4}\right)}$ 1/sin (5π/4)

$\csc\left(\frac{5\pi}{4}\right) = -1.41 = \frac{1}{\cos\left(\frac{5\pi}{4}\right)}$

$\cot\left(\frac{5\pi}{4}\right) = 1 = \frac{1}{\tan(5\pi/4)}$