Calculus I
FIVES Sheet

F=Fun at home **I**=Incunabula **V**=Variety **E**=Endeavors **S**=Specimens

Monday 8/28

F #0 Find out about the rules of the class. Fill out data sheet (in class).

I Send me an email (include your name & period) for Calculus updates!

V Cover your beautiful new book.

E Find out about the rules of the class. Fill out data sheet (in class).

S Make sure you get the data sheet.

Tuesday, 8/29

F #1 Worksheet #1 Always bring a covered book, pencil, pen, regular paper, graph paper, and your graphing Calculator to class.

I 1. Find radius of circle $x^2 + y^2 - 25 = 0$. 2. Name an integer.

V Use six 7's to write an expression that has a value of 110.

E 1. Go over rules of class. 2. Go over rules of contest. 3. Review coordinates and slopes: parallel and perpendicular lines; slope, midpoint, and distance formulae; forms of linear equations. 4. The contest begins–avoid being caught!

S 1. Which CD's would you choose if you won the contest?????
2. Find the slope: a) (1,3) (5,2) b) (1,3) (5,3) c) (1,3) (1,6)
3. Find the equation: (1,3) (5,2)
4. Find the slope, x-intercept, and y-intercept: $4x + 3y = 12$

Wednesday, 8/30

F #2 Worksheet #2 1–11

I 1. Name two rational numbers that are not integers.
2. Name a rational number less than zero.

V If $2^n = 8$, what is the value of 3^{n+1} ?

E 1. Review writing an equation of a line.

S 1. Find the slope of the line through (2,3) and (–4,7).
2. Find the slope of the line $2x + 3y = 5$.
3. Write an equation for the line through (–2,–1) and (3,4).
4. Write the equation of the line through (2,1) and parallel to the line $2x + y = 3$.
5. Write the equation of the line through (2,1) and perpendicular to the line $2x + y = 3$.

Thursday, 8/31

F #3 p.19 #5-29 odd, p. 20 #51,52
MAKE SURE THAT YOU READ EACH PROBLEM CAREFULLY AND SHOW ALL WORK FOR EVERY PROBLEM!!

I 1. 5 is what % of 75? 2. Change $\frac{3}{5}$ to a percent.

V Is tan x even, odd, or neither and explain why (a graph is not enough and a specific example is not enough — your solution must be a general one).

E 1. Find domain and range of a function. 2. Determine if a relation is even, odd, or neither.
3. Form a composition of two functions.

S 1. Give the domain and range of $y = \frac{1}{1-3x}$ 2. Give the domain and range of $y = |x|$.
3. Is $y = x^2 - 2$ even, odd, or neither?
4. If $f(x) = x - 2$ and $g(x) = \sin x$, then find $f[g(x)]$ and $g[f(x)]$.

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Friday, 9/1

F #4 1. If points A and B are symmetric about the y–axis and point A has coordinate (6,2), then find the coordinates of point B. **ALSO DO THE FOLLOWING:**
p.9 # 9-24 mod 3, then find x- and y-intercepts, and p. 18 # 1,3,4,6 and p. 19 # 12, 18

I Solve for x: $\frac{1}{2x-1} = \frac{1}{9}$

V Use nine 8's to write an expression that has a value of 14.

E Absolute value inequalities, slopes and lines

S Find the domain and range of $f(x) = \frac{1}{x-4}$

Tuesday, 9/5

F #5 Worksheet #3

I SAT Sponges 1, 2

V p. 19 # 34

E Final review for tomorrow's first easy test.

S If g is an odd function, and g(4) = 9, then what is g(–4)?

Wednesday, 9/6

F #6 For the following, find a) $f(x+h)$ b) $f(x+h) - f(x)$ c) $\frac{f(x+h)-f(x)}{h}$

1. $f(x) = x^2$ 2. $f(x) = \frac{1}{2x}$

Remember to show all work — don't just give an answer!!!

I On the SAT sponge #4

V What is the last digit in the number 7^{1000} ?

E **Our first easy test—many more to come!**

S Are you following the rules

Thursday, 9/7

F #6.5 Read pp. 99-101. Then do p. 105 # 1-4

I On the SAT sponge worksheet, #5,6

V p. 105 # 14

E Definition of the derivative

S Are you still in the contest?

Friday 9/8

F #7 Worksheet #4 (Values).

I None

V p.106 #18

E To get you to think about what is important to you.

S What does it mean to you that someone is old? What do you value?

Monday 9/11

F #8 p.105 # 7,8 (use definition of derivative), #9-13,15

I SAT Sponges 9, 10

V p.124 #16

E Definition of Derivative, Power Rule, Graph of the Derivative

S Surveys have shown that the ability to get along with people is one of the top qualities that employers are looking for in an applicant. Do you have this quality?

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Tuesday, 9/12

F #9 p.124 # 13,15, 17, 19, 21, 23

I SAT Sponges 11, 13

V p. 153 # 42

E To use the package, product, and the quotient rules in finding derivatives, including derivatives of trig functions

S 1. Find $\frac{dy}{dx}$ if $y = (3x^2 - 5x)^3$ 2. . Find $\frac{dy}{dx}$ if $y = (2x+1)(x^2 - 2)$

3. Find f ' (x) if $f(x) = \frac{7x^2 + 1}{4x + 5}$

Wednesday, 9/13

F #10 p.153 (2,4,8, 13-27 odd) and p.161 (15,17)

I SAT Sponges 13, 14

V p. 170 (44)

E To find derivatives of implicitly defined functions and slopes of implicit functions

S 1. Find $\frac{dy}{dx}$ if $x^2 + xy + y^2 = 4$ 2. Find $\frac{dy}{dx}$ if $y^3 = (x^2+1)^2$ 3. Find $\frac{dy}{dx}$ if $y = \frac{\sin x}{1 - \cos x}$

4. Find $\frac{dy}{dx}$ if $y = \sec x \csc x$ 5. Find $\frac{d^2y}{dx^2}$ if $y^2 = x^2 + 2x$

Thursday, 9/14

F #11 p.162 # 27-35 odd p. 178 # 1-9 odd, 15-19 odd, 32, 33

I SAT Sponges 15, 16

V p.179 # 52

E 1. To find the derivatives of exponential functions and natural log functions.

S 1. Find $\frac{dy}{dx}$ if $y = e^{2x}$. 2. Find $\frac{dy}{dx}$ if $y = \ln(\sin x)$. 3. Find $\frac{d^2y}{dx^2}$ when $y^2 - 2x = 1 - 2y$.

4. Find $\frac{dy}{dx}$ if $y = \ln\left(\frac{x}{x - 1}\right)$ 5. Find $\frac{dy}{dx}$ if $y = e^{\sin^2 x}$ 6. $x + \sin(xy) = 0$

7. Find $\frac{dy}{dx}$ if $y = \ln x^5$ 8. Find $\frac{dy}{dx}$ if $y = \tan\left(e^{x^2}\right)$

Friday, 9/15

F #12 p.181 # 1-21 odd, 35, 39

I p. 180 #4

V p.182 # 46 Find the equation of the normal only.

E 1. To review all of the rules for finding derivatives. 2. To prepare for upcoming test.

S 1. Find $\frac{dy}{dx}$ if $2y^3 = \cos\left(x^2\right)$. 2. $y = \ln\left(x^2 + x - 1\right)$ 3. Are you still in the contest? Be Careful!

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Monday, 9/18

F #13 Worksheet #5

I SAT Sponges 21,22.

V p.182 #54 a & b

E 1. To practice AP–type differentiation problems. 2. To prepare for upcoming test.

S 1. Find $\frac{dy}{dx}$ if $y = \left[\sin^2\left(7x^2 - 2\right)\right]^2$ 2. Find the derivative of $\frac{1}{x}$ using the definition of derivative.

Tuesday, 9/19

F #14 Worksheet #6

I SAT Sponges 23, 24

V Find the equation of the tangent to the curve y = x sin x at the point $\left(\frac{\pi}{2}, \frac{\pi}{2}\right)$

E 1. Final review for tomorrow's easy test on derivatives.
2. Remember: $e^{\ln a} = a$, $\ln e^a = a$, $\ln e = 1$, $\ln 1 = 0$.

S Find $\frac{dy}{dx}$ for the following: 1. $\sin y + \cos x = 7$ 2. $y = \ln\left(\frac{e^x + 1}{e^x - 1}\right)$ 3. $x = \cos y$

4. $y = \frac{5}{(3x^2 + 1)^3}$

5. Find f ' (x) using the definition: $y = 3x^2 - x + 1$ 6. Find the slope of the tangent line and the slope of the normal to the curve $y = \frac{3}{(x + 5)^2}$ at the point where x = –4.

Wednesday 9/20

F #15 Worksheet → Simplifying Exponential Functions and Logs

I SAT Sponges 25, 26

V Solve for y in terms of x: $\ln(y^2 - 1) - \ln(y + 1) = \ln(\sin x)$

E **Another easy Calculus test – this one on derivatives**.
Simplify exponential and logarithmic equations.
Remember: $e^{\ln a} = a$, $\ln e^a = a$, $\ln e = 1$, $\ln 1 = 0$.
Watch out!! Follow the rules!! Stay in the Contest!!!

S None