Calc II Recitation D **Name: _____**

Recitation Five: 7/13/2015

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Objectives:
I. Complete the Square
II. Trig substitution
III. Quick Review of Newton's Method
III. Quiz

I. Complete the Square!
Procedure:
1

2

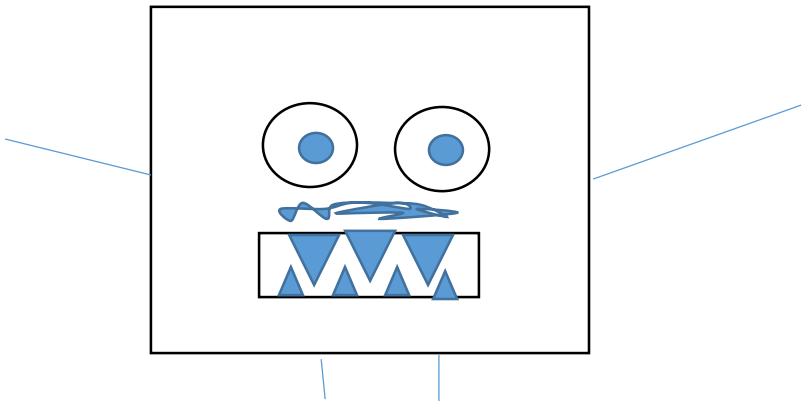
3

4

5.

Example One:
Complete the square in the following equation:
$4x^2 - 2x - 5 = 0$

Example Two:
Triangle somehow escaped the pokeball he was bulging out of previously. Darn, again? Cerealously?. He is evolving! Into another useless pokemon! Square-agon! He now looks like this.



Square-agon is certainly spawned from some unknown circle of something? (Bikini Bottom?). Anyways blah blah blah blah blah blah blah blah complete the square in the following equation or be eaten by square-agon.

$$-x^2 + x + 5 = 0$$

Example Three:
Bonus!
Proof the quadratic formula using completing the square. Starting from the following equation!
$ax^2 + bx + c = 0$

Trig Substitution (Yay!) Cue Music
"Huh! ... What is it good for? Absolutely **something!** Huh! What is it good for? Absolutely **something**! Huh! Say it again y'all!"

-Okay Matt for reals not for fakes…

-ITS GOOD FOR SOLVING DIFFICULT INTEGRALS!! OF THE FOLLOWING FORMS!!! (and taking quizzes like in 20 minutes)

$$\int \frac{b}{(a^2+u^2)^n}\,dx$$

$$\int \frac{b}{(a^2-u^2)^n}\,dx$$ Where n is an integer or a fraction but not 0

$$\int \frac{b}{(u^2-a^2)^n}\,dx$$

Insert of table of knowledge Sammy Bestowed upon us

If Integral involves:	Use substitution of:	Identity	Mnemonic Device

Example Four! Mnemonic Devices! Our Favorite friends!
-Each team will work to construct a mnemonic device for one of the trig substitutions
-Matt will reveal the mnemonic devices he made after wards.
(3 minutes allowed)

Procedure for solving:

Example Five: (Time for the stuff!) Boom Boom Firepowah!
Find the antiderivative of the following indefinite integral:
$\int \frac{1}{\sqrt{x}(1+x)}\,dx$ (It looks like tangent!)

Example Six:

Find the antiderivative to the following indefinite integral! Sweet! Just what my tired brain wants to do Matt! You rock! (You welcome—sincerely, Matt)

$\int \sqrt{15+6x-9x^2}\ dx$ (Looks like Sin Substitution!)

Example Seven: (Last practice one before quiz)
You really really want a burrito. You have been starving for a burrito since day one and each time you go to the burrito store they speak very quickly and somehow it doesn't even sound like English! Because it's not! They speak Calculus at burrito stores! (YYYY????) Mostly changing volumes and what not, but today we find you laying on the floor of the burrito place curled up in a ball drooling with thoughts of burritos dancing in your head. The person decides be nice and says he will give you a burrito if you can (drum roll please!!!!!) solve the following question! LOL

Find the antiderivative:

$$\int \frac{1}{x^2\sqrt{4x^2-9}}\,dx$$

You after you receive your burrito. (You might be a little strange hahahaha)
-Who isn't strange though? ☺

ONWARDS!!

Review of Newton's Method:

I. Newton's Method:
Summary – Approximations of solutions (roots) of functions

$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$$

Procedure:
i. Find f(x) and f'(x) & Plug into general equation
ii. Choose an x_0 "guess x value" that is near in value to your suspected root (look at graph if necessary)
iii. Plug formula into calculator

a. Press "**Y=**"
b. Enter $y = x - \frac{f(x)}{f'(x)}$ into Y_1
c. In main window enter x_0 so calculator has it stored in **ANS**
d. Press "**VARS**"
e. Navigate to "**Y-VARS**"
f. Select Y_1
g. Add "**(ANS)**" next to Y_1, it should read $Y_1(ANS)$ in main window
h. Press enter. The number returned is your first approximation
i. Press enter repeatedly to get as many approximations as you want

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SWEET!

QUIZ TIME!! (11:50pm!)

We believe in you!