Calc II Recitation D **Name: _____**

Recitation Three: 7/7/2015

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Objectives:
1. Quick Quiz Review
2. Quiz
3. Newton's Method
4. Linear Approximation
5. Quadratic Approximation

I. Quick Quiz Review (10 minutes max)

1. Definition of Derivative & Proofs
2. Log Rules
3. L'Hopital's Rule
4. Implicit Differentiation
5. Chain Rule
6. Special Limts and Trig Identities

II. QUIZ TIME!

III. Newton's Method

Wut is is?: (Concept from Lecture)

How does it do this?

Through a series of _____ line approximations giving iterations of

Formula:

Graph Notes & Formula Derivation

Newton's Method Procedure:

1.

2.

3.

4.

5.

Example One:
Approximate a solution to the following equation to 3 Decimal Places

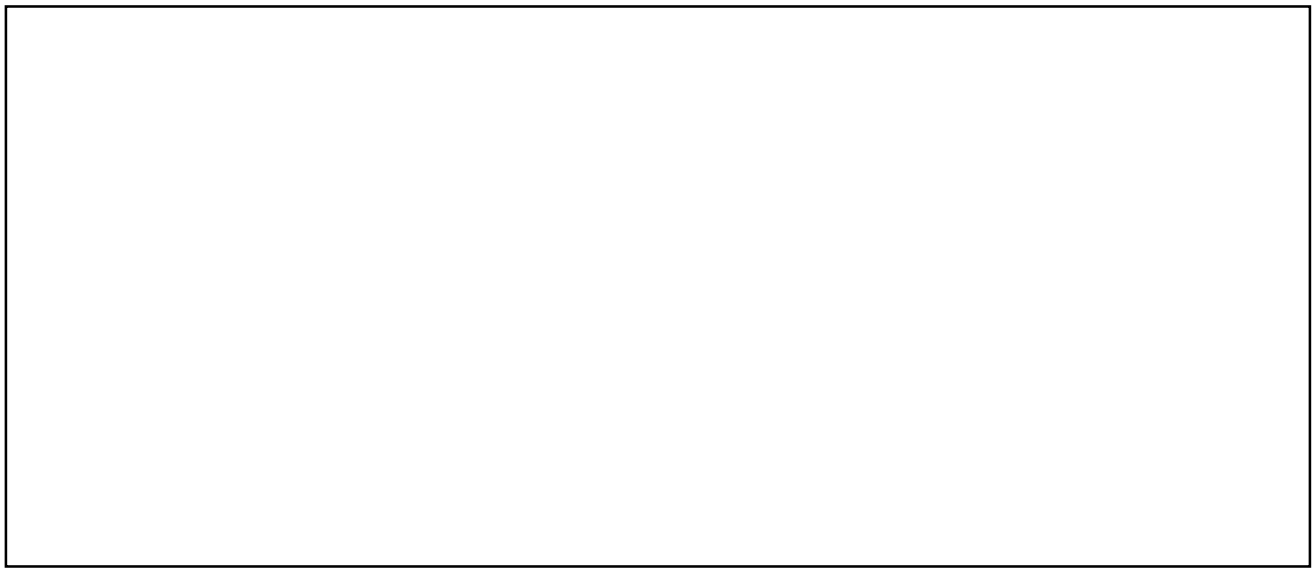
$x^5 - 100 = 0$

Example One Continued:

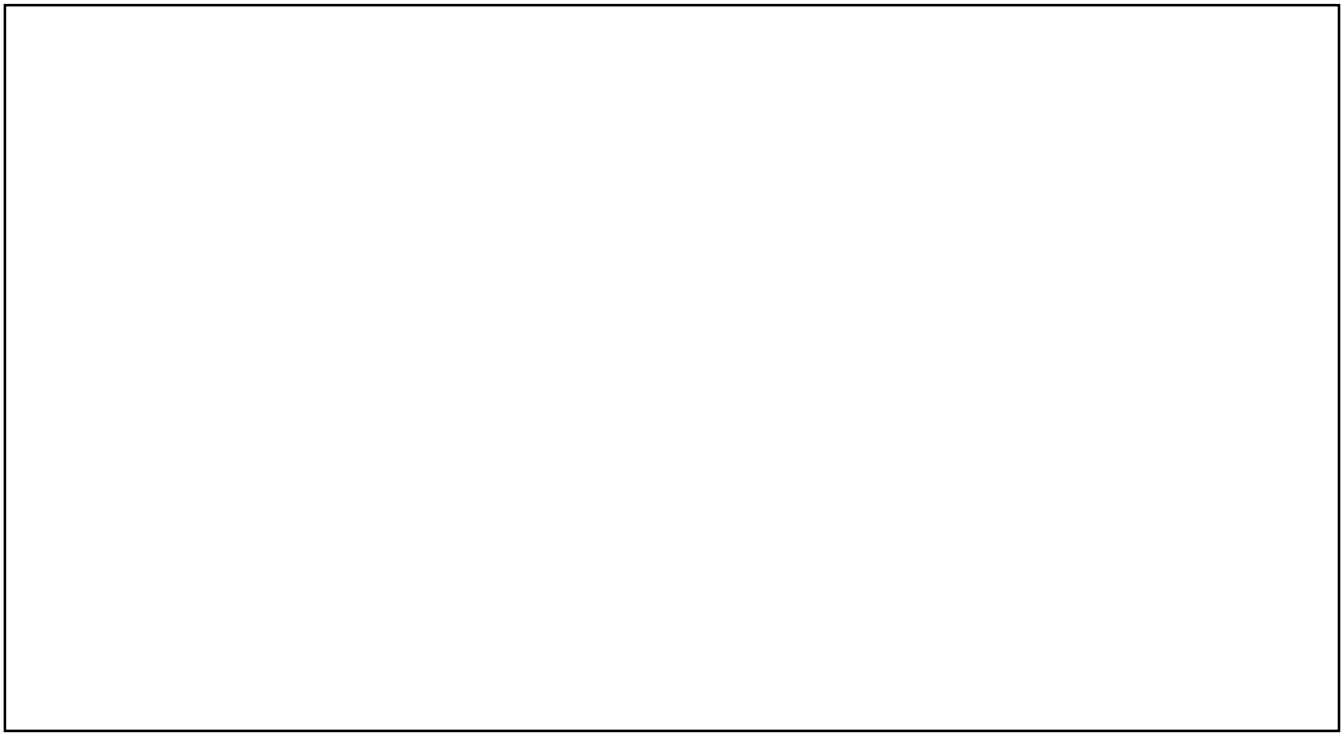
Example Two:
Approximate the following number to 4 decimal places

$5^{\frac{1}{3}}$ (Yo Matt How we do dis?!!) *Matt shall provide hint

Example Three:
Show Newton's Method Applied to equation
$\frac{1}{x} - a = 0$
Gives
$x_{n+1} = 2x_n - a\,(x_n)^2$



Example Four:
You are peanut People. You like Peanuts. It's your thing. You have a peanut jar with the number of peanuts in it modeled by:
$t = tsin(t)$
You want to know at what times, t, the jar is empty but you are too lazy to use a timer! Math is easy! LOL. You decided to use calculus (Wow… So proud)
Approximate times, t, where there are not peanuts. (I hope there are always peanuts)



IV. Linear Approximation

1. Wut is this!!? Why???
   -WAT?

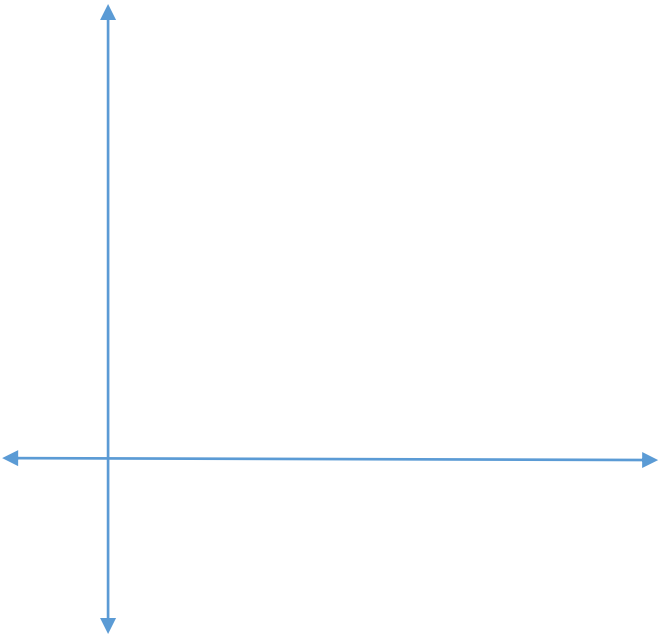
Question: How is this different from Newton's Method?

A. They are the same, they both approximate stuff
B.

C. What is Life? (If you figure it out please tell Matt)
D. Newton's Method approximates **x** when f(x) = 0 &
   Linear Approximation approximates f(x)

NEAT!!!

Question: How does it work?
-Wow great question!



IV. Linear Approximation Continued:

Procedure:

1.

2.

3.

Practice! YAY!

(Matt likes Doug the dog)

Example Five:

Find the linear approximation of:

$$f(x) = \ln(\cos(x) + 2x^2)$$

At x = 0; aka approximates f(0) = ?

Example Six:
Approximate

$$f(x) = \sqrt[5]{3122}$$

Using Linear Approximation

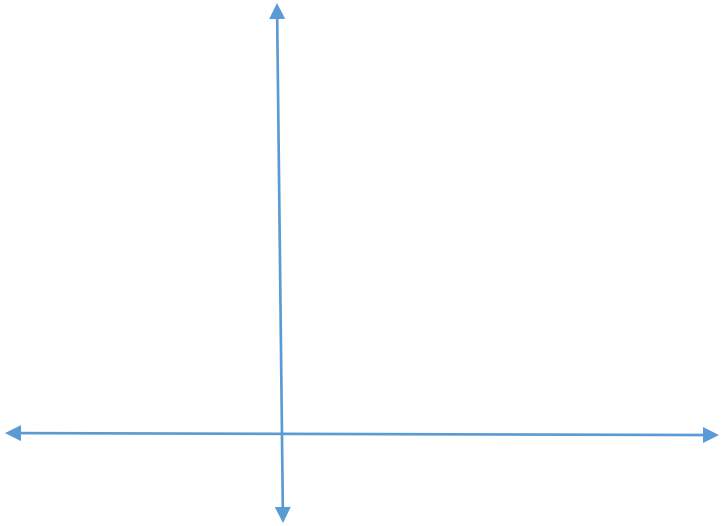
V. Quadratic Approximation

-Now what Matt?

Another one seriously? That quiz T-Reck me. Now dis? Whyyy?
BWAHAHAHA
WE LIKE MATH!!!

Question:

How is this different from linear approximation?



Question:

How do we use this?

Procedure:

1.

2.

3.

4.

5.

Example Seven:
Approximate for x = 0

$$f(x) = \tan(x)$$

Using the quadratic approximation formula to degree n = 2.

WE T-WRECK MATH PROBLEMS