

MT Review Day 1

1/18/19

Homework:

- Complete MT Review #1
- MT Review #2 - #1-10
- P. 2 & 10/11 - Friday, 1/25
- P. 12 - Thursday, 1/24

Objective: Review concepts for the mid termDo Now:

Find the value of a that makes continuous for all real numbers.

$$f(x) = \begin{cases} 2x + 4, & x \leq 3 \\ ax - 1, & x > 3 \end{cases}$$

Nov 6-2:37 PM

Given: $y = (4x^3 - 3)^8$ Find: y'

Given: $f(x) = \sec^5(9x)$ Find: $f'(x)$



Jan 28-7:33 AM

Given: $s(t) = -4.9t^2 + 12t + 20$

Evaluate:

$$v(2)$$

$$a(2)$$

When is the velocity -24 m/s?



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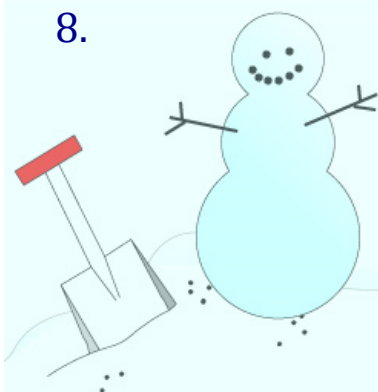
Limits Review...

Strategies for evaluating limits:

- | | | |
|--|--|---|
| <ol style="list-style-type: none"> 1. 2. 3. 4. 5. 6. 7. 8. | | <ol style="list-style-type: none"> 1. Direct Substitution 2. Tables 3. Graphical 4. Rationalizing 5. Finding equivalent functions - <ol style="list-style-type: none"> a. Clearing complex fractions b. Factoring and simplifying 6. Using Trig Identities 7. Using known Trig limits |
|--|--|---|

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1 \quad \lim_{x \rightarrow 0} \frac{1 - \cos x}{x} = 0$$

8. For limits approaching $\pm\infty$, divide by highest degree in denominator



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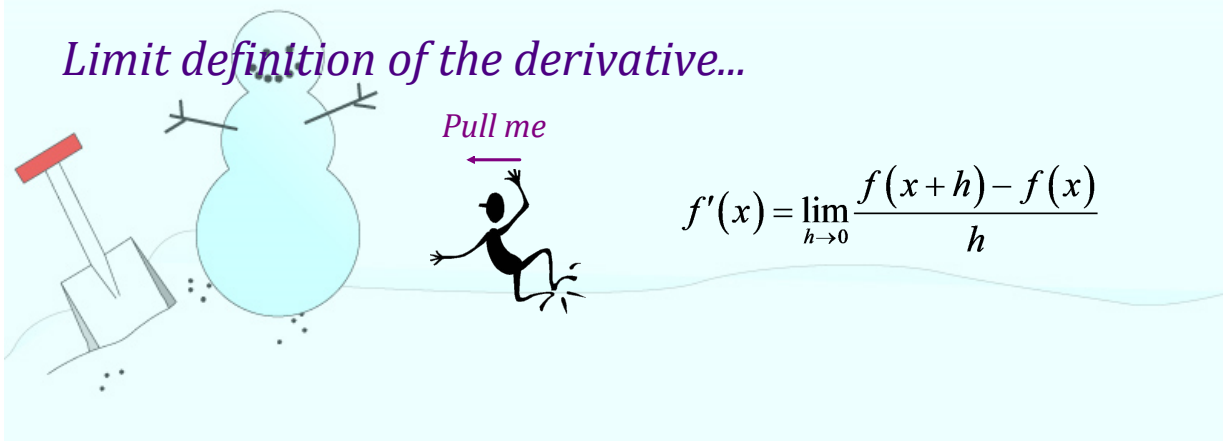
For $f(x)$ to be continuous at a point $x = a...$

Pull me



1. $f(a)$ defined
2. $\lim_{x \rightarrow a^-} f(x) = \lim_{x \rightarrow a^+} f(x)$
 $\therefore \lim_{x \rightarrow a} f(x)$ exists
3. $f(a) = \lim_{x \rightarrow a} f(x)$

Limit definition of the derivative...



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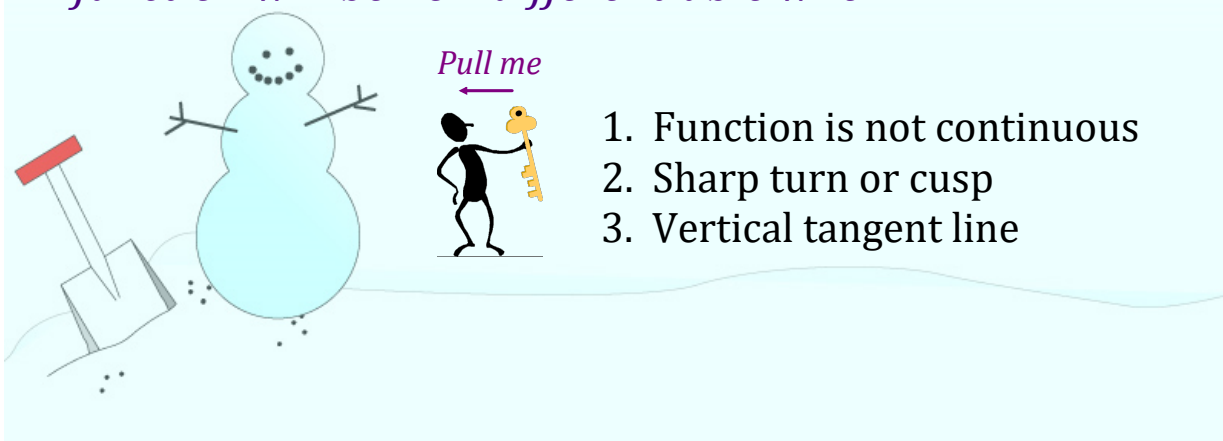
Differentiability...

Pull me



1. Continuity does NOT guarantee differentiability
2. Differentiability guarantees continuity

A function will be non-differentiable when...



1. Function is not continuous
2. Sharp turn or cusp
3. Vertical tangent line

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