Calculus 1 - Homework 15

Professor:
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Office Hours:
Check the class website for office hours: calculus1.joannabieri.com

Prepare for Class

1. Watch Lectures:
   - More examples of Derivative Rules
2. Read Book:
   - Review Chapters 2.1-2.5 (Derivative Rules)
3. Practice taking derivatives using all of the rules.
4. Make a list of questions for your group and professor. You can post these questions to your group channel.
5. Start working on the homework problems.
6. Come get help if you need it!

Homework Problems - Non-Book Problems

You should attempt all these problems before class, but we will work on them in class with our groups. For each of the functions below, do the following:

- Graph the function.
- Based on the graph talk about where the first derivative will be positive, negative, or zero.
- Based on the graph talk about where the second derivative will be positive, negative, or zero.
- Take the first derivative using the derivative rules - say what rules you are applying.
- Graph the derivative function and comparing to the graph of the original function, talk about why your result makes sense.
- Find the tangent line at $x = 0$ and use the tangent line to approximate $f(.3)$.

1. $f(x) = 2x\sin(3x)$
2. $f(x) = \cos^2(x)$
3. $f(x) = e^x\cos(x^2)$
4. $f(x) = e^{-\sin(x)}$
5. $f(x) = 4\tan(3x^3)$
6. $f(x) = x^2e^x\sin x$
7. $f(x) = e^{\sin(2x)}$
8. $f(x) = \sqrt{4^x - x^3 + \ln(3)}$
9. $f(x) = 5^{\cos(x^2)}$
10. $f(x) = e^2\sin(4) + x^2$

Hand In - Video Number 6
Due Monday 10/12 11:59pm
All of the problems listed here will be eligible for a homework video. Please make sure to sign up!
Practice! Practice! Practice! The better you are at applying the derivative rules now, the easier the rest of class will be.