MATH 111-007 QUIZ 3

SEPTEMBER 27TH, 2021

Problem 1. Find the derivative of the following functions. If you run out of time, write down the **best** derivative rule (among the ones we have learned so far) for each problem.

(1) $f(x) = 6x^5\left(3x^2+1\right)$.

(2) $g(y) = \sqrt[3]{y^2}\,(y-1)^{-1}$.

Problem. (Bonus) Based on your knowledge of the product rule for two functions, guess (1 pt for correct guess) or prove (2 pts) the product rule for three functions, e.g. $\frac{d}{dx}\left(f(x)\,g(x)\,h(x)\right) = ?$ (Hint: write down $\frac{d}{dx}\left(f(x)\,g(x)\right)$ is, first, then think how you can put yourself in position to use it when considering $\frac{d}{dx}\left(f(x)\,g(x)\,h(x)\right)$. Do you <u>have</u> to consider all 3 functions simultaneously <u>or not</u>?)