

This problem is worth 20 points. Read the entire problem before you start. This problem is open everything: you may freely discuss your work with anyone and use any resources you can find, and you do not need to cite sources. I expect, as always, that any work that you submit represents your mathematical understanding.

$$A(x) = x^2 + ax$$

$$B(x) = b^2 - \sqrt[3]{x}$$

$$C(x) = \frac{c}{x} + \frac{x}{c}$$

$$D(x) = d^2 - 7d$$

$$E(x) = x^e + e^e$$

$$F(x) = f^2x^2 + fx$$

$$G(x) = g\sqrt{x} + x\sqrt{g}$$

$$H(x) = 2hxx2h + hxx$$

$$J(x) = \frac{j}{x} + \frac{j}{x^2}$$

$$K(x) = \sqrt[k]{x} - kx$$

1. Pick two different functions from the list above.
2. Do the following problem on a separate sheet of paper:
 - (a) Let $P(x)$ be the product of the functions you chose. Write down $P(x)$, but don't do anything with it yet.
 - (b) Find $P'(x)$ without foiling by using the product rule.
 - (c) Foil $P(x)$, then find $P'(x)$ using only the power rule. (This is always possible: you never need the product or quotient rules for *any* of these if you're careful.)
 - (d) Using algebra if necessary, show that your two answers are actually the same.
3. Take a picture of your work, and name the picture the product of the functions you chose (like AB.jpg or CF.png or DJ.pdf or whatever). Upload your problem to the Google Drive; limit one upload per student.
4. There are 45 possible pairs of functions and 45 students in MATH 131 this semester. You get .5 points for each pair that's properly uploaded by 10:50am on Friday.