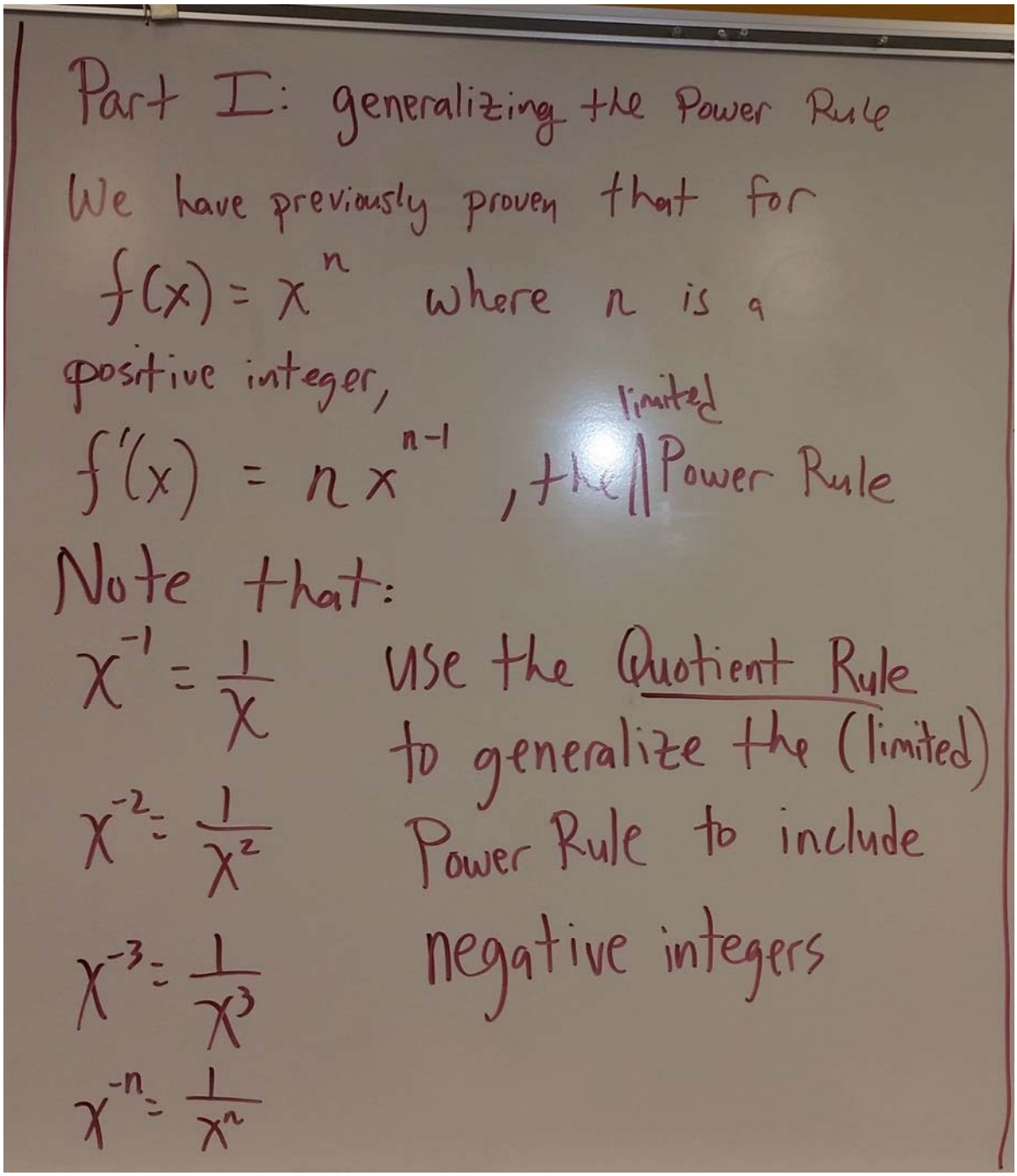
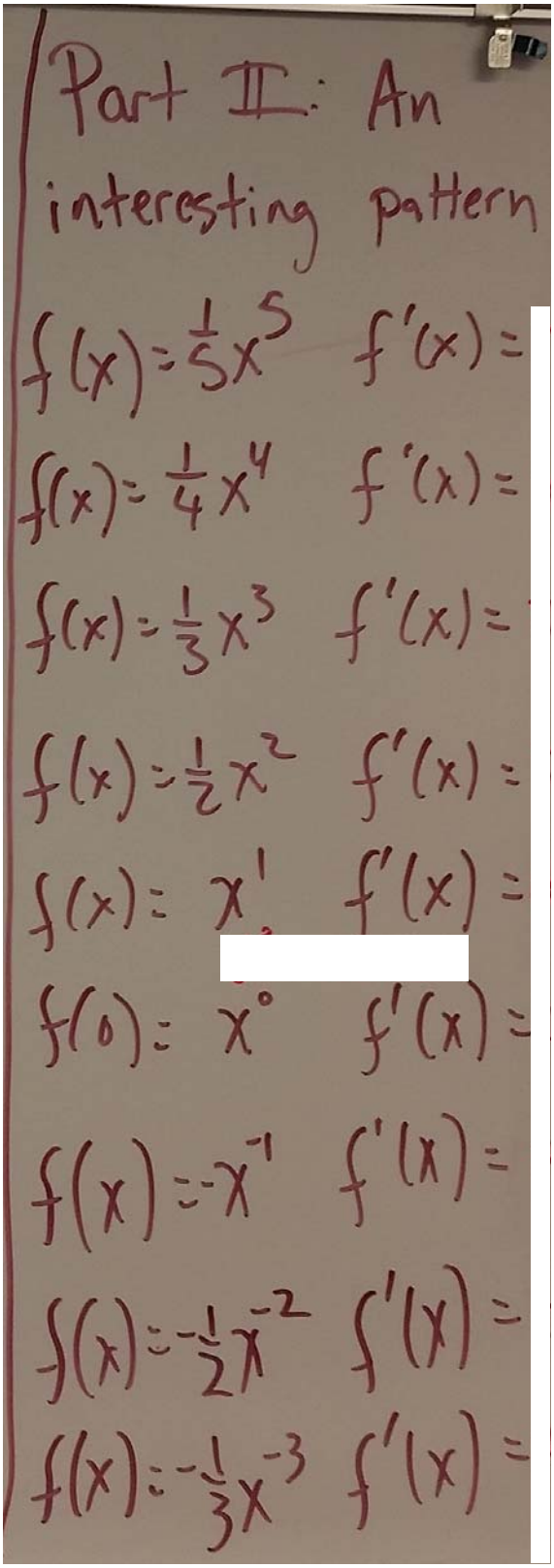
Math Lab 5: Derivative Mysteries

(My Math Lab 5 file got corrupted somehow – I think the source of my printing difficulties. Here are the pictures of the board from that day. When/If I get a chance, I'll produce a regular version of the lab. These pictures should be sufficient for now).





What's missing from this pattern?

Part III: Chain Rule? I don't need no Stinking Chain Rule. (yes. you do)

Try out the following

a) $f(x) = (2x)^2$

Can you use Power Rule on this function?

$f(x) = (2x)^2 = (2x)\cdot(2x)$ ← use the Product Rule

$f(x) = (2x)^2 = 2^2x^2 = 4x^2$ ← use the Power Rule

b) $f(x) = e^{2t}$

Can you use the Exponent Rule on this function?

$f(x) = e^{2t} = (e^t)^2 = (e^t)(e^t)$

↗ use Exponent Rule and Product Rule

c) $f(x) = (x^2+1)^{1/2}$ Power Rule? Product Rule? Quotient Rule?

Part IV: Sines and Cosines

a) use the limit definition of the derivative to show that for $f(x) = \sin x$

$f'(x) = \lim_{h\to 0}$?

b) Can you do any simplifying Algebra?

c) Look up angle addition formulas to do some algebra on your part a) result.