Math 21A
Kouba
Challenge Discussion Sheet 4

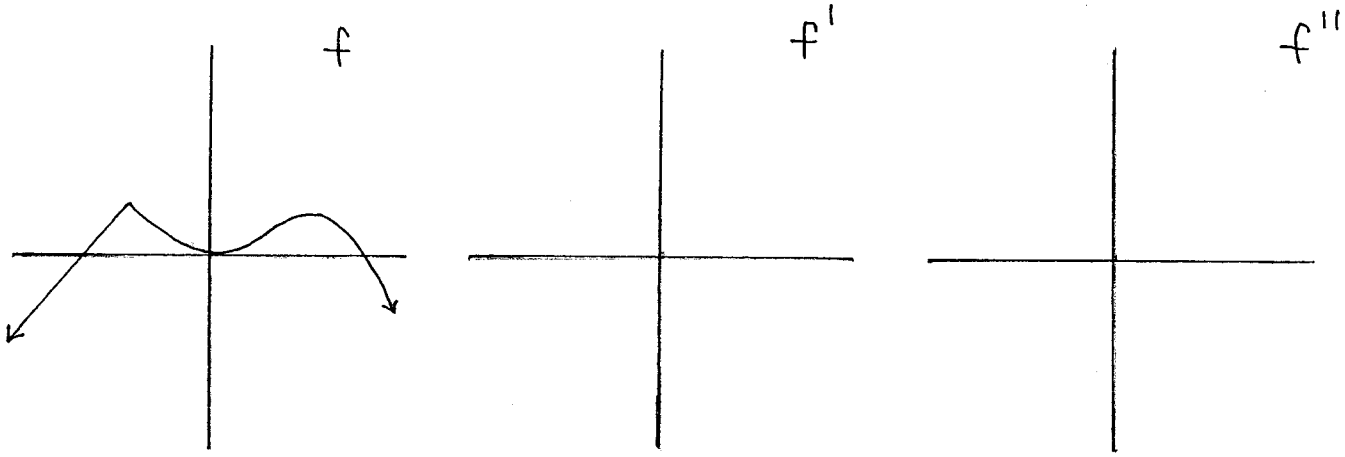
1.) Assume that the function $w(t)$ is your weight (in pounds) at time t (in months).

a.) What are the units for the derivative $w'(t)$?
b.) What is the meaning of $w'(t)$ in this context ?

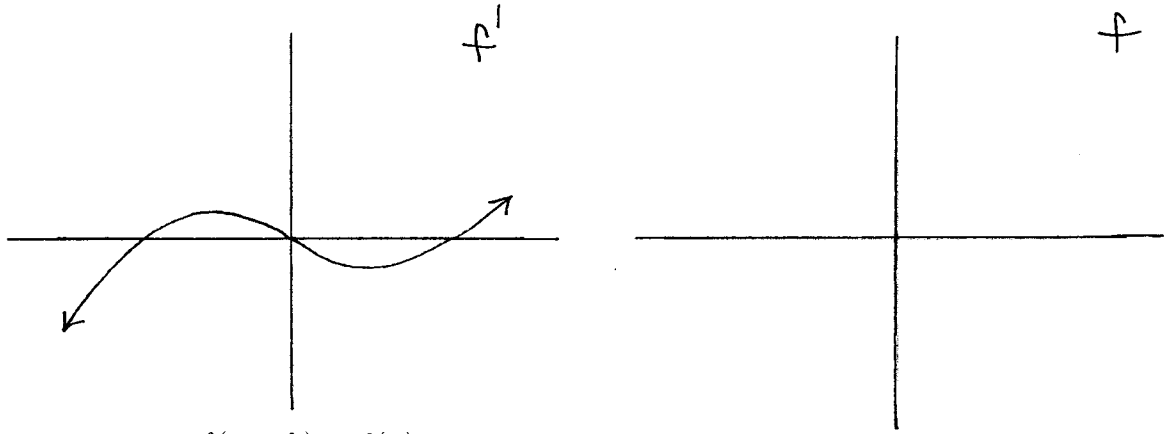
2.) For each function $y = f(x)$ solve $f'(x) = 0$ for x and set up a sign chart for f'.

a.) $f(x) = \dfrac{x^3}{x-2}$ b.) $f(x) = (1/2)x - \cos x$ for $0 \leq x \leq 2\pi$.

3.) Use the graph of f to sketch the graphs of f' and $f'' = (f')'$, the derivative of the derivative.



4.) Use the graph of f' to sketch the graph of f.



5.) Use $\lim\limits_{h \to 0} \dfrac{f(x+h) - f(x)}{h}$ to differentiate the function $f(x) = \ln x$ (HINT: Use properties of logarithms and the fact that $\lim\limits_{w \to 0} \left(1 + w\right)^{1/w} = e$.)