Problem Set 4 Writeup

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1 Continuos But Not Smooth

Find values for a and b given the piecewise function,

$$f(x) = \begin{cases} ax + b, & x > 0\\ sin2x, & x \le 0 \end{cases}$$

such that the function is continuos but not differentiable.

Given 0=a0+b we can conclude it is continuous whenver b=0. However the slope of ax+b is always a so as long as a doesn't match it will be fine. At the very least $a\leq 0$ will be safe.