

## Problem 1

Using the definition of the derivative as a limit, find  $f'(x)$  when  $f(x) = 2x^2$ . (you may not use the power rule)

## Problem 2

Using the definition of the derivative as a limit, find  $f'(x)$  when  $f(x) = \frac{x^2}{2} + 2x$ . (you may not use the power rule)

## Problem 3

Using the definition of the derivative as a limit, find  $f'(x)$  when  $f(x) = \frac{1}{x^2 + 1}$ . (you may not use the chain rule, or the power rule)