

9. (6 points)

(a) Write the *limit definition* of  $g'(2)$  for an arbitrary differentiable function  $g$ .

$$g'(2) = \lim_{h \rightarrow 0} \frac{g(2+h) - g(2)}{h}.$$

(b) Use limit and summation notation to define  $\int_a^b h(x)dx$  for an arbitrary continuous function  $h$ .

$$\int_a^b h(x)dx = \lim_{n \rightarrow \infty} \left( \sum_{i=0}^{n-1} h(x_i) \Delta x \right) = \lim_{n \rightarrow \infty} \left( \sum_{i=1}^n h(x_i) \Delta x \right).$$

[Note: either the LHS or the RHS could be used here. Both are not necessary.]