

**Quiz 1****Your name:****Your TA's name:**

1. [5 points] Find the functions  $f \circ g$ ,  $g \circ f$  and their domains if

$$f(x) = \sin x, \quad g(x) = \sqrt{x - \frac{1}{2}}$$

2. [5 points] Evaluate the limit, if it exists. If it does not exist explain why.

$$\lim_{h \rightarrow 0} \frac{\sqrt{1+h} - 1}{h}$$

3. [5 points] Explain why the function is discontinuous at  $a = 1$ .

$$f(x) = \begin{cases} \frac{1}{x-1}, & \text{if } x \neq 1 \\ 2, & \text{if } x = 1 \end{cases}$$