

Your Name:

Duration of the Quiz is 20 minutes. There are two problems, worth 20 points. Show all your work for full credit. Books, notes etc. are prohibited. Calculators are NOT permitted.

1. Evaluate the limit.

$$\lim_{x \rightarrow 0} \frac{\sin 4x}{\tan 3x}$$

2. Let

$$f(x) = \begin{cases} 2x - x^2 & \text{if } x < 2 \\ 2 - x & \text{if } 2 \leq x \leq 3 \\ \sin\left(\frac{\pi}{6}x\right) & \text{if } x > 3 \end{cases}$$

Evaluate the following

(i) (5 pts) $\lim_{x \rightarrow 2} f(x)$

(ii) (5 pts) $\lim_{x \rightarrow 3} f(x)$ **Hint:** $\sin\left(\frac{\pi}{2}\right) = 1$

(iii) (3 pts) Indicate in interval notation where f is continuous. If there is any point of discontinuity, determine if it is removable, jump or infinite discontinuity. Please justify your answer.