

Math 10A

Quiz 4; Tuesday, 7/2/2018

Time: 3 PM

Instructor: Roy Zhao

Name: _____

Circle True or False. (1 point for correct answer, 0 if incorrect)

1. True False If we take $\lim_{x \rightarrow \infty} f(x)^{g(x)}$ and get 1^∞ , then the limit is 1.

2. True False If we take $\lim_{x \rightarrow \infty} f(x)^{g(x)}$ and get 0^∞ , then we need to use L'Hopital's Rule.

Show your work and justify your answers. Please circle or box your final answer.

3. (10 points) (a) (3 points) Find $\lim_{x \rightarrow 0} \frac{x \tan x}{\sin 3x}$.

(b) (7 points) Sand is being dumped in a conical pile whose width and height always remain the same. If the sand is being dumped in at a rate of $5\pi \text{ cm}^3/\text{min}$, how fast is the height of the sand changing when the pile is 10 cm tall?