

WRITE YOUR NAME:

MAC 2311 Homework 6

Due in class, Friday March 31st

You can use more paper if necessary, but please STAPLE

Question 1. Find the local linear approximation of the function $f(x) = \sqrt{x}$ at $x_0 = 9$, and use it to estimate $\sqrt{8}$ and $\sqrt{10}$.

Question 2. Find the local linear approximation of the function $f(x) = \sqrt{1+x}$ at $x_0 = 0$, and use it to estimate $\sqrt{0.9}$ and $\sqrt{1.1}$.

Question 3. Evaluate the limit.

$$\lim_{x \rightarrow 0} \frac{x^2}{\sin x}$$

Question 4. Evaluate the limit.

$$\lim_{x \rightarrow 0} \frac{e^x - 1}{\sin x}$$

Question 5. Evaluate the limit.

$$\lim_{x \rightarrow 0} \frac{\sin 2x}{\sin 5x}$$

Question 6. Evaluate the limit.

$$\lim_{x \rightarrow 0} (1 - 3x)^{1/x}$$