

Drill Handout Sections 4.6 and 4.7 November 12, 2019 Name: _____

- (1) Write the equation of the line that represents the linear approximation to the following functions at the given point a , and use the linear approximation to estimate the given quantity.

(a) $f(x) = \sin x$, $a = 0$, $f(0.2)$

(b) $f(x) = \cos x$, $a = 0$, $f(0.05)$

(c) $f(x) = e^x$, $a = 0$, $f(-0.1)$

(2) Evaluate the following limits:

(a)

$$\lim_{x \rightarrow 1} \frac{\ln x}{x - 1}$$

(b)

$$\lim_{x \rightarrow \infty} \frac{e^{2x} - 4}{e^{3x} + 5}$$

(c)

$$\lim_{x \rightarrow 0} \frac{e^x - x - 1}{x^2}$$