

Name _____

You have 15 minutes for this quiz – no calculators allowed.

1. (2 points) Which one of the following equations must hold in order for a function f to be continuous at a number a ?

(a) $\lim_{x \rightarrow 0} f(x) = f(a)$

(b) $\lim_{x \rightarrow 0} f(x) = 0$

(c) $\lim_{x \rightarrow 0} f(x) = a$

(d) $\lim_{x \rightarrow a} f(x) = f(a)$

(e) $\lim_{x \rightarrow a} f(x) = 0$

(f) $\lim_{x \rightarrow a} f(x) = a$

(g) $\lim_{x \rightarrow \infty} f(x) = f(a)$

(h) $\lim_{x \rightarrow \infty} f(x) = 0$

(i) $\lim_{x \rightarrow \infty} f(x) = a$

2. (2 points each) Evaluate the following limits. Show sufficient work to justify each answer.

(a) $\lim_{x \rightarrow 0} \frac{\sin(2x)}{x \cos x}$

(b) $\lim_{x \rightarrow 3^+} \frac{8x + 1}{6 - 2x}$

(c) $\lim_{x \rightarrow \infty} \frac{6 + x^2}{3 + 4x^2}$

3. (2 points) Prove that $\lim_{x \rightarrow 0} 5x^6 \sin\left(\frac{3}{x}\right) = 0$.