Quiz #1 Calculus 1 Dr. Taleb Alkurdi

Name_____ ID:---------- Fall Semester 161

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

1) It can be shown that the inequalities $-x \le x\cos\left(\frac{1}{x}\right) \le x$ hold for all values of $x \ge 0$. 1) _____

Find $\lim_{x\to 0} x\cos\left(\frac{1}{x}\right)$ if it exists.

Find the limit.

2) $\lim_{x\to -\pi} \sqrt{x+6}\cos(x+\pi)$ 2) _____

Find the limit, if it exists.

3) $\lim_{x\to 10} \frac{|10-x|}{10-x}$ 3) _____

Provide an appropriate response.

4) Let $\lim_{x\to 10} f(x) = 16$. Find $\lim_{x\to 10} \sqrt[4]{f(x)}$. 4) _____

Find the limit.

5) If $\lim_{x\to 1} \frac{f(x)-3}{x-1} = 2$, find $\lim_{x\to 1} f(x)$. 5) _____

A function f(x), a point c, the limit of f(x) as x approaches c, and a positive number ε is given. Find a number $\delta > 0$ such that for all x, $0 < |x-c| < \delta \Rightarrow |f(x)-L| < \varepsilon$.

6) $f(x) = 5x+1$, $L = 16$, $c = 3$, and $\varepsilon = 0.01$ 6) _____

Find the limit.

7) $\lim_{x\to 1^+} \frac{\sqrt{3x}(x-1)}{|x-1|}$ 7) _____

Find the limit and determine if the function is continuous at the point being approached.

8) $\lim_{x\to \pi/2} \cos\left(\frac{3\pi}{2}\cos(\tan x)\right)$ 8) _____

Find the intervals on which the function is continuous.

9) $y = \frac{2}{(x+2)^2+4}$ 9) _____

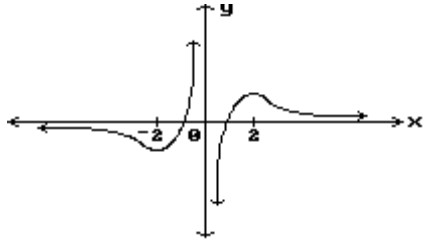
Solve the problem.

10) To what new value should f(2) be changed to remove the discontinuity? 10) _____

$$f(x) = \begin{cases} 2x + 4, & x < 2 \\ 10 & x = 2 \\ x + 6, & x > 2 \end{cases}$$

Find all points where the function is discontinuous.

11) 11) _____



Find numbers a and b, or k, so that f is continuous at every point.

12) 12) _____

$$f(x) = \begin{cases} -15, & x < -3 \\ ax + b, & -3 \le x \le 2 \\ 10, & x > 2 \end{cases}$$

Answer Key
Testname: QUIZ1_CAL1_161

1) 0
2) $\sqrt{6 - \pi}$
3) Does not exist
4) 2
5) 3
6) $\delta = 0.002$
7) $\sqrt{3}$
8) does not exist; no
9) continuous everywhere
10) 8
11) x = 0
12) a = 5, b = 0