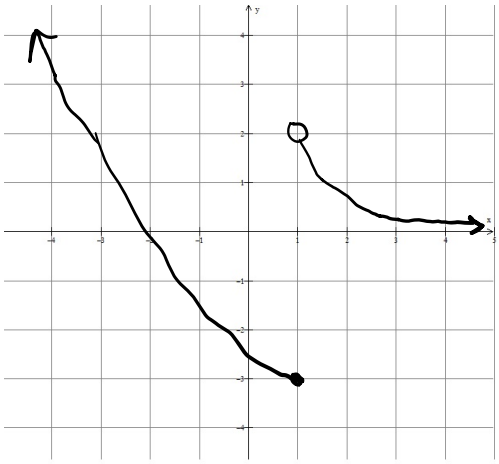
Name:_____ Date:_____

Calculus 12 LG 2-3 Quiz Ver B /26

1. Consider the following function $y = f(x)$. Find: (1/2 mark each)



a) $\lim_{x \to 1^-} f(x)$

b) $\lim_{x \to 1^+} f(x)$

c) $\lim_{x \to 1} f(x)$

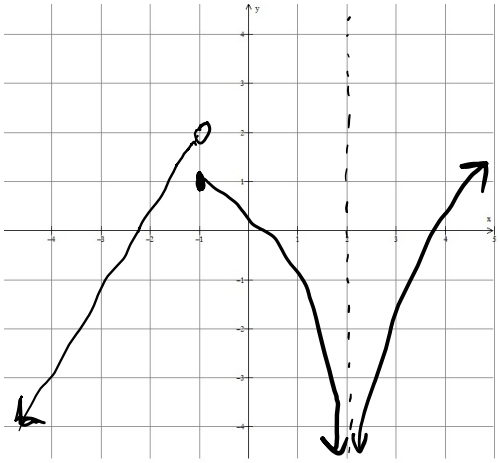
d) f(1)

e) $\lim_{x \to -\infty} f(x)$

f) $\lim_{x \to +\infty} f(x)$

/3

2. For what values of x does the limit exist in the following function? (2 marks)



3. Determine the following limits. (2 marks each)

a) $\lim_{x \to 5} \frac{2x-3}{x^2-1}$

b) $\lim_{x \to +\infty} \frac{4x^2-7}{6x-12x^3}$

c) $\lim_{x \to 4^+} \frac{3-x}{x^2-2x-8}$

d) $\lim_{x \to -\infty} \frac{3-2x}{\sqrt{4x^2+1}}$

/10

4. Determine the following limits. (2 marks each)

a) $\lim_{x\to 0^+} \frac{sinx}{3x}$

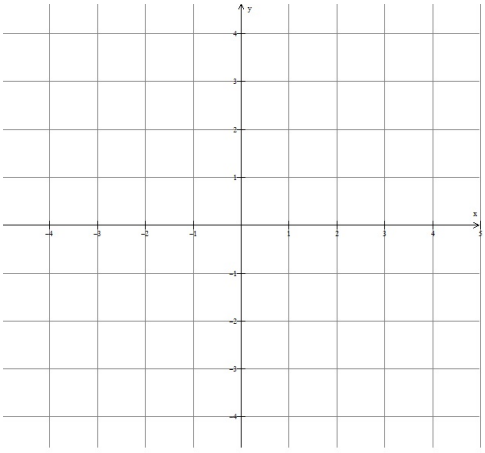
b) $\lim_{x\to 0} \frac{sin4x}{tan6x}$

5. Find the points of discontinuity (if any). (2 marks each)

a) $f(x) = \frac{2x-1}{x^2-x-12}$

b) $f(x) = \begin{cases} 2x^2 - 3, & x < -2 \\ 3 - x, & x \geq -2 \end{cases}$

6. Sketch the graph of a function that is continuous everywhere but has a non-removable discontinuity at x=-2 and is also not continuous at x=1 but it continuous from the left. (2 marks)



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7. Prove that the function $f(x) = \frac{3x-4}{2x^2-9x-5}$ is not continuous at x = 5. Is the discontinuity removable? (3 marks)

/3