Quiz Limits 2019 A.doc Name Answers
Intro to Calculus

1) Find the following limits. If the limit *Does Not Exist* state D.N.E. and why ($+\infty, -\infty, \textit{left} \neq \textit{right}$).

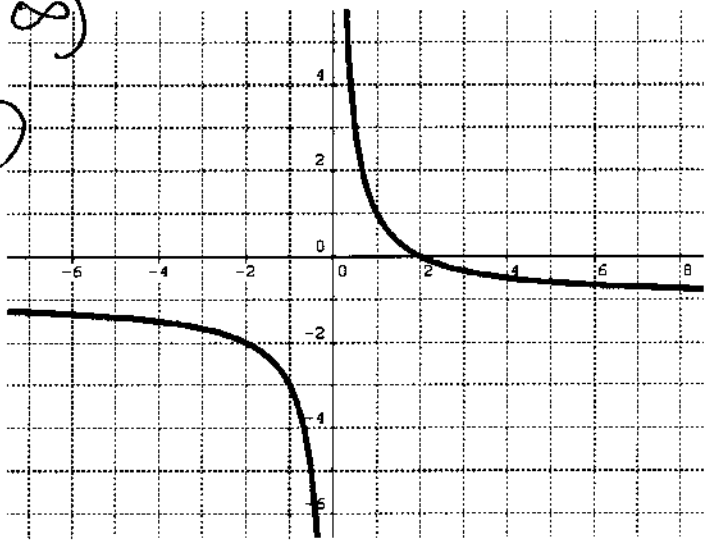
a) $\lim_{x \to 0^-} f(x) =$ DNE $(-\infty)$

b) $\lim_{x \to 0^+} f(x) =$ DNE (∞)

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

d) $\lim_{x \to -\infty} f(x) = -1$

e) $\lim_{x \to 2} f(x) = 0$



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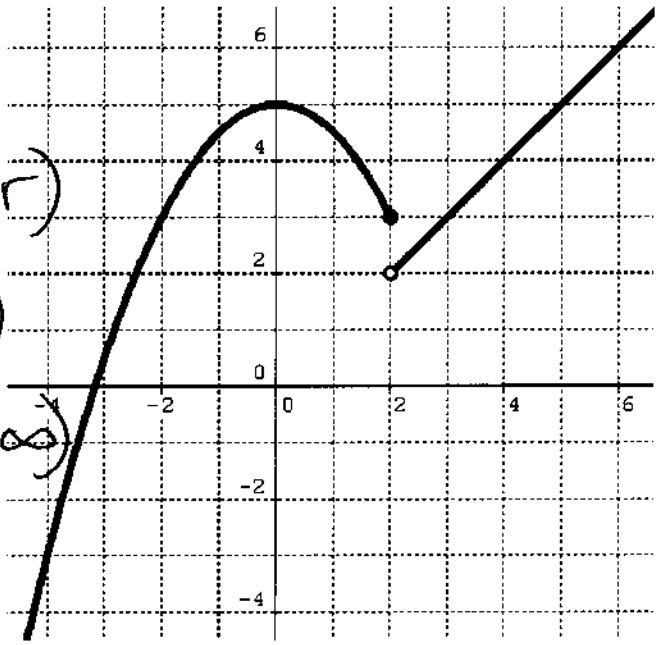
e) $\lim_{x \to 2^+} f(x) = 2$

f) $\lim_{x \to 2} f(x) =$ DNE $(l \neq r)$

h) $\lim_{x \to \infty} f(x) =$ DNE (∞)

i) $\lim_{x \to -\infty} f(x) =$ DNE $(-\infty)$

j) $\lim_{x \to 0} f(x) = 5$



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2) Describe in words what it means to find the limit of a function as we approach a given x value.

The limit of a function is the y value that you get infinitely close to as you get infinitely close to a given x-value.

Find the following limits. Circle the correct answer **AND** show work whenever possible.

3) $\lim_{x \to -3^-} \dfrac{x-3}{x+3}$ $\dfrac{-6}{0}$ (a) -1 (b) 0 (c) *DNE* (∞) (d) *DNE* $(-\infty)$

$\dfrac{-3.5-3}{-3.5+3} = +$ $\dfrac{-3.9-3}{-3.9+3} =$ more $+$ so heading up towards ∞

4) $\lim_{x \to -\infty} \dfrac{x^3+8x^2+1}{-9x^2+x-2}$ (a) $-\dfrac{1}{9}$ b) $\dfrac{3}{4}$ (c) *DNE* (∞) (d) *DNE* $(-\infty)$

end behavior $\dfrac{-\text{huge}}{-\text{smaller}}$

5) $\lim_{x \to -6^+} \dfrac{x+6}{2x^2+13x+6}$ $\dfrac{0}{0}$ (a) -11 (b) 0 (c) $-\dfrac{1}{11}$ (d) $\dfrac{1}{13}$

$\dfrac{x+6}{(x+6)(2x+1)} \Rightarrow \dfrac{1}{2x+1} \Rightarrow \dfrac{1}{2(-6)+1} = -\dfrac{1}{11}$

6) $\lim_{x \to -2^+} \dfrac{x^3+2x^2+2x+4}{x+2}$ $\dfrac{0}{0}$ (a) -2 (b) 6 (c) *DNE* (∞) (d) *DNE* $(-\infty)$

$\dfrac{x^2(x+2)+2(x+2)}{x+2} \Rightarrow \dfrac{(x+2)(x^2+2)}{x+2} \Rightarrow (-2)^2+2=6$

7) $\lim_{x \to -4^-} \dfrac{x+4}{x^2-8x-16}$ $\dfrac{0}{32}$ (a) $-\dfrac{1}{8}$ (b) 0 (c) *DNE* (∞) (d) *DNE* $(-\infty)$

$= 0$

8) $\lim_{x \to \infty} \dfrac{-x^2+5x-6}{5x^2+1}$ (a) $-\dfrac{1}{5}$ (b) 0 (c) *DNE* (∞) (d) *DNE* $(-\infty)$

end behavior

9) $\lim_{x \to 0^-} \dfrac{x+7}{x^2+7x}$ $\dfrac{7}{0}$ (a) 0 (b) 7 (c) *DNE* (∞) (d) *DNE* $(-\infty)$

$\dfrac{-1+7}{(-1)^2+7(-1)} = \dfrac{+}{-} = \text{neg.}$ $\dfrac{-.1+7}{(-.1)^2+7(-.1)} = \dfrac{+}{-} = \text{more neg.}$