Limits Set 4

… Answers are after each page of problems

Evaluate the following. Show supporting work for each problem.

1. $\lim_{x\to 4} \dfrac{x^2-4x}{x^2-3x-4} =$

2. $\lim_{x\to 0} \dfrac{(4+x)^2-16}{x} =$

3. $\lim_{x\to 0} \dfrac{\sqrt{9+x}-3}{x} =$

4. $\lim_{x\to 0} \dfrac{\dfrac{1}{2+x}-\dfrac{1}{2}}{x} =$

5. $\lim_{x\to 2} \dfrac{x^2-4}{x^3-8} =$

6. $\lim_{x\to 2^+} x^3+1$

7. $\lim_{x\to 3^-} \dfrac{1}{3-x} =$

8. $\lim_{x\to 4^+} \dfrac{4-x}{|4-x|} =$

9. $f(x)=\begin{cases} 1-x \text{ if } x\le 1 \\ x^2 \text{ if } x>1 \end{cases}$

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

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

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

Limits Set 4

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Answers

Worksheet 3 on Limits

1. $\frac{4}{5}$
2. 8
3. $\frac{1}{6}$
4. $-\frac{1}{4}$
5. $\frac{1}{3}$
6. 9
7. ∞
8. -1
9. (a) 0
   (b) 1
   (c) dne

Limits Set 4
… Answers are after each page of problems

Evaluate the following. Show supporting work for each problem.

10. $g(x)=\begin{cases} x+2 & \text{if } x\neq 1 \\ \pi & \text{if } x=1 \end{cases}$

$\lim_{x\to 1} g(x)=$

11. $\lim_{x\to 3^-} \dfrac{x^2|x-3|}{x-3}=$

12. $\lim_{x\to 3^-} \dfrac{x^2-3}{x-3}=$

13. $\lim_{x\to 0} \dfrac{\tan x}{x}=$

14. $\lim_{x\to 0} \dfrac{\sin x}{7x-3x^2}=$

15. $\lim_{x\to 0} \dfrac{4x+\sin x}{3x}=$

16. $\lim_{x\to 0} \dfrac{2\sin(5x)}{\sin(4x)}=$

17. $\lim_{x\to 0} \dfrac{(1-\cos x)^2}{5x}=$

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18. If $2x\le g(x)\le x^4-x^2+2$ for all x, find $\lim_{x\to 1} g(x)$. Which theorem did you use?

Limits Set 4

… Answers are after each page of problems

Answers

Worksheet 3 on Limits

10. 3
11. -9
12. ∞
13. 1
14. $\frac{1}{7}$
15. $\frac{5}{3}$
16. $\frac{5}{2}$
17. 0
18. 2 by the Squeeze Theorem