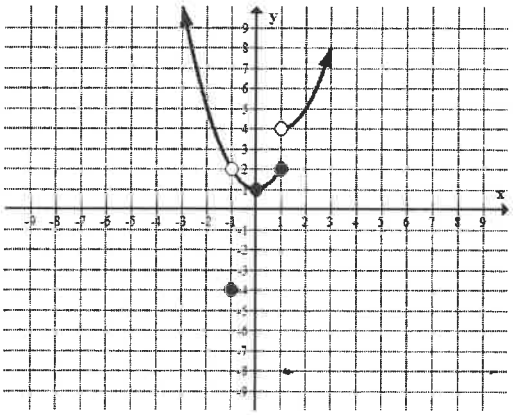
Limits GW (7.1) : Name Key Section:_____ Date :_____
32 points Group No:_____

Use the graph of $f(x)$ given to fill in the blanks. Write DNE if applicable.



1. $f(0) = 1$ 2. $\lim_{x\to 0^-} f(x) = 1$ 3. $\lim_{x\to 0^+} f(x) = 1$ 4. $\lim_{x\to 0} f(x) = 1$

5. $f(-1) = -4$ 6. $\lim_{x\to -1^-} f(x) = 2$ 7. $\lim_{x\to -1^+} f(x) = 2$ 8. $\lim_{x\to -1} f(x) = 2$

9. $f(1) = 2$ 10. $\lim_{x\to 1^-} f(x) = 2$ 11. $\lim_{x\to 1^+} f(x) = 4$ 12. $\lim_{x\to 1} f(x) = DNE$

13. $f(-2) = 5$ 14. $\lim_{x\to -2^-} f(x) = 5$ 15. $\lim_{x\to -2^+} f(x) = 5$ 16. $\lim_{x\to -2} f(x) = 5$

Find each limit. Write DNE if applicable. USE PROPER NOTATION WHEN SHOWING WORK FOR THE PROBLEMS BELOW!

13. $\lim_{x\to 3}(x^2-9) = 3^2-9 = 0$

14. $\lim_{x\to 2}(0) = 0$

15. $\lim_{x\to -5}\left(\frac{x+5}{x^2-25}\right) = \lim_{x\to -5}\frac{(x+5)}{(x+5)(x-5)} = \lim_{x\to -5}\frac{1}{x-5} = \frac{1}{-5-5} = \frac{-1}{10}$

16. $\lim_{x\to -2}\left(\frac{3x^2+5x-2}{x+2}\right) = \lim_{x\to -2}\frac{(3x-1)(x+2)}{(x+2)} = \lim_{x\to -2}(3x-1) = 3(-2)-1 = -7$

USE PROPER NOTATION WHEN SHOWING WORK FOR THE PROBLEMS BELOW! Points are allotted for notation!

For problems 17—19, use $f(x) = \begin{cases} x-5 & x \le 3 \\ 1-x & x > 3 \end{cases}$ to find each limit. Write DNE if applicable.

17. $\lim_{x\to 3^-} f(x) = -2$ $\lim_{x\to 3^-}(x-5) = 3-5 = -2$

18. $\lim_{x\to 3^+} f(x) = -2$ $\lim_{x\to 3^+}(1-x) = 1-3 = -2$

19. $\lim_{x\to 3} f(x) = -2$

For problems 20—22, use $g(x) = \begin{cases} x^2-3 & x < -2 \\ 2x-5 & x \ge -2 \end{cases}$ to find each limit. Write DNE if applicable.

20. $\lim_{x\to -2^-} g(x) = 1$ $\lim_{x\to -2^-}(x^2-3) = (-2)^2-3 = 1$

21. $\lim_{x\to -2^+} g(x) = -9$ $\lim_{x\to -2^+}(2x-5) = 2(-2)-5 = -9$

22. $\lim_{x\to -2} g(x) = DNE$