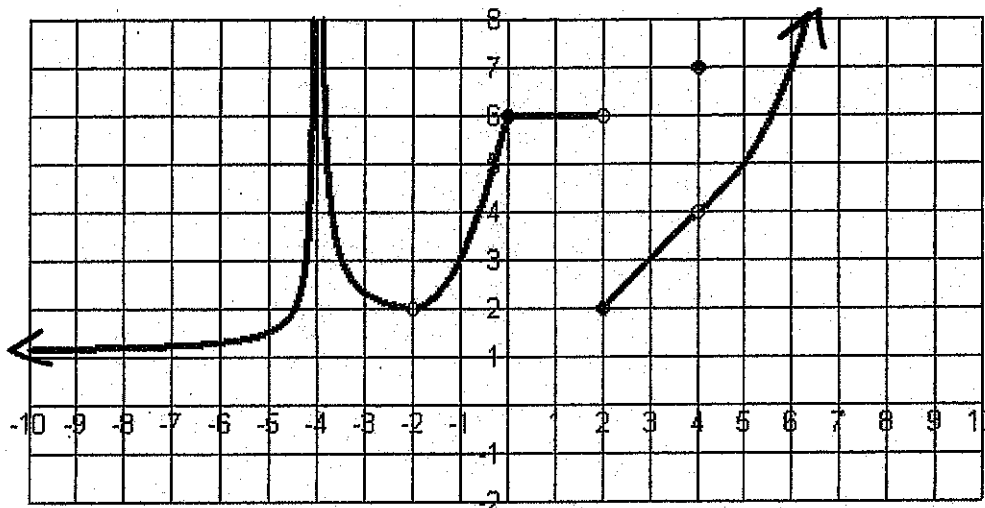


Limits and Continuity
 Calculus Concepts
 Unit 1

Name

key

Date



Use the graph of $f(x)$ shown above to answer questions 1-27.

1. $\lim_{x \rightarrow -\infty} f(x) = \underline{1}$

4. $\lim_{x \rightarrow 4^+} f(x) = \underline{+\infty}$

2. $\lim_{x \rightarrow \infty} f(x) = \underline{+\infty}$

5. $\lim_{x \rightarrow 4^-} f(x) = \underline{+\infty}$

3. $\lim_{x \rightarrow -4^-} f(x) = \underline{+\infty}$

6. $f(-4) = \underline{\text{und.}}$

7. Is $f(x)$ continuous at $x = -4$? Why or why not? If it is not continuous, state the type of discontinuity and explain why it has that type of discontinuity. not cont, infinite
 $f(-4)$ is undefined

8. $\lim_{x \rightarrow -2^-} f(x) = \underline{2}$

10. $\lim_{x \rightarrow -2} f(x) = \underline{2}$

9. $\lim_{x \rightarrow -2^+} f(x) = \underline{2}$

11. $f(-2) = \underline{\text{und.}}$

12. Is $f(x)$ continuous at $x = -2$? Why or why not? If it is not continuous, state the type of discontinuity and explain why it has that type of discontinuity. not cont, hole,
 $f(-2)$ is und. $f(-2) \neq \lim_{x \rightarrow -2} f(x)$

$$13. \lim_{x \rightarrow 0^-} f(x) = \underline{6}$$

$$15. \lim_{x \rightarrow 0} f(x) = \underline{6}$$

$$14. \lim_{x \rightarrow 0^+} f(x) = \underline{6}$$

$$16. f(0) = \underline{6}$$

17. Is continuous at $x = 0$? Why or why not? If it is not continuous, state the type of discontinuity and explain why it has that type of discontinuity

yes

$$18. \lim_{x \rightarrow 2^-} f(x) = \underline{6}$$

$$20. \lim_{x \rightarrow 2} f(x) = \underline{\text{dne}}$$

$$19. \lim_{x \rightarrow 2^+} f(x) = \underline{2}$$

$$21. f(2) = \underline{2}$$

22. Is continuous at $x = 2$? Why or why not? If it is not continuous, state the type of discontinuity and explain why it has that type of discontinuity.

not cont,
jump $f(2) \neq \lim_{x \rightarrow 2} f(x)$
 $\lim_{x \rightarrow 2} f(x) = \text{dne}$

$$23. \lim_{x \rightarrow 4^-} f(x) = \underline{4}$$

$$25. \lim_{x \rightarrow 4} f(x) = \underline{4}$$

$$24. \lim_{x \rightarrow 4^+} f(x) = \underline{4}$$

$$26. f(4) = \underline{7}$$

27. Is continuous at $x = 4$? Why or why not? If it is not continuous, state the type of discontinuity and explain why it has that type of discontinuity.

not cont,
hole, $f(4) \neq \lim_{x \rightarrow 4} f(x)$