

Analysis Honors
Review Worksheet
Limits & Continuity #4

Show that each of the following functions is either continuous or discontinuous at the given value of x .

1. $f(x) = x + 5$ at $x=1$

2. $f(x) = x^2 + 2x - 1$ at $x=0$

2. $f(x) = \frac{x^2 - 16}{x - 4}$ at $x=4$

4. $f(x) = \frac{x^2 - 25}{x + 5}$ at $x=5$

5. $f(x) = [x]$ at $x=2$

6. $f(x) = \frac{|x+1|}{x}$ at $x=2$

7. $f(x) = \frac{1}{x}$ at $x=3$

8. $f(x) = \frac{3x - 1}{2x + 6}$ at $x = -3$

State whether each function is continuous or discontinuous for all x . Justify your answer.

9. $f(x) = x^2 + 2$

10. $f(x) = \frac{1}{x}$

11. $f(x) = \frac{x^2 + 1}{x - 1}$

12. $f(x) = |x - 1|$

Each of the following has point discontinuity. Assign values to $f(x)$ that remove the discontinuity.

$$13. f(x) = \frac{x^2 - 4}{x - 2}$$

$$14. f(x) = \frac{x^2 - 5x + 6}{x - 2}$$

$$15. f(x) = \frac{x^2 - 5}{x - \sqrt{5}}$$

$$16. f(x) = \frac{x^3 + 8}{x + 2}$$

Give the open interval(s) for which each function is continuous.

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

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