

12-3 Practice Problems

State the graphical feature associated with each description (continuous, removable discontinuity, step discontinuity, or unbounded behavior).

1. the one-sided limits exist, but they are different values
2. the limit exists, and it is the same as the value of the function at that domain location.
3. the one-sided limits do not exist, the limit does not exist, and the function does not exist at this domain value.
4. the limit exists, but it does not equal the value of the function at that domain location.
5. the one-sided limits exist, and they are the same as the value of the function at that domain location.
6. the limit exists, but the function does not exist at that domain location.

Evaluate each limit, or state DNE if the limit does not exist.

7. $\lim_{x \rightarrow 3} \frac{x - 3}{x + 2}$

8. $\lim_{x \rightarrow -2} \frac{x - 3}{x + 2}$

9. $\lim_{x \rightarrow 4} \frac{x^2 - 16}{x + 4}$

10. $\lim_{x \rightarrow -4} \frac{x^2 - 16}{x + 4}$

11. $\lim_{x \rightarrow -3} \frac{x^2 + 5x + 6}{x^2 - 9}$

12. $\lim_{x \rightarrow 3} \frac{x^2 - 5x + 6}{x^2 - 9}$

Answer Key

1. step discontinuity
2. continuous
3. unbounded behavior
4. removable discontinuity
5. continuous
6. removable discontinuity

7. 0
8. DNE
9. 0
10. -8
11. $1/6$
12. $1/6$