



Identify discontinuities

1

What set describes the domain of this function?

$$f(x) = \frac{-4}{1x - 4}$$

A $\{X \in \mathbb{R} \mid -4 < X < 4 \text{ or } 4 \leq X\}$

B $\{X \in \mathbb{R} \mid X < 4 \text{ or } 4 < X\}$

3

What is the vertical asymptote of this rational function?

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

A Vertical asymptote at $x = -1$

B Vertical asymptote at $x = 1$

C Vertical asymptote at $x = 2$

D Vertical asymptote at $x = -2$

2

What is the vertical asymptote of this rational function?

$$f(x) = \frac{(x + 2)}{x}$$

A Vertical asymptote at $x = 0$

B Vertical asymptote at $x = -2$

C Vertical asymptote at $x = -3$

D Vertical asymptote at $x = 2$

4

Is there a hole at $x=2$ when this polynomial is divided by this binomial?

$$f(x) = \frac{x(x - 2)(x - 3)}{(x - 2)(x - 4)}$$

A No

B Yes

5

Is there a hole at $x=0$ when this polynomial is divided by this binomial?

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

A No

B Yes

6

Does the two-sided limit of this function exist at $x = 1$?

$$f(x) = \begin{cases} -2x + 2, & x \leq 1 \\ -x + 1, & x > 1 \end{cases}$$

A No

B Yes



Identify discontinuities

7

Where are the holes when this polynomial is divided by this binomial?

$$f(x) = \frac{(x-1)}{(x-1)}$$

A

$$x = 1$$

B

$$x = 1, x = 4$$

C

$$x = -1$$

D

No holes

8

Where are the holes when this polynomial is divided by this binomial?

$$f(x) = \frac{x^2 - 3x + 2}{x^2 - 3x + 2}$$

A

$$x = -2$$

B

No holes

C

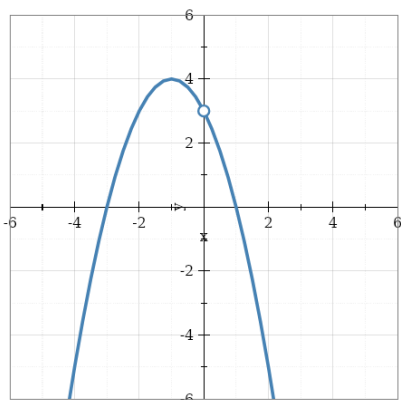
$$x = 1, x = 2$$

D

$$x = -2, x = -1$$

9

Use the graph to evaluate $\lim_{x \rightarrow 0} f(x)$.



A

$$\lim_{x \rightarrow 0} f(x) = 4$$

B

$$\lim_{x \rightarrow 0} f(x) = 5$$

C

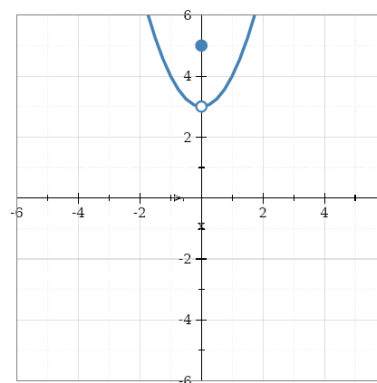
$$\lim_{x \rightarrow 0} f(x) = 3$$

D

$$\lim_{x \rightarrow 0} f(x) = 2$$

10

Use the graph to find the value $f(x)$ approaches as x gets closer to 0.



A

$$\lim_{x \rightarrow 0} f(x) = 4$$

B

$$\lim_{x \rightarrow 0} f(x) = 3$$

C

$$\lim_{x \rightarrow 0} f(x) = 2$$

D

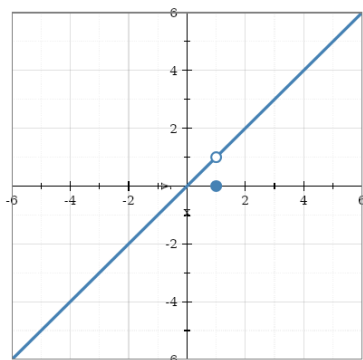
$$\lim_{x \rightarrow 0} f(x) = 5$$



Identify discontinuities

11

Use the graph to find the value $f(x)$ approaches as x approaches 1, and the value of $f(1)$.



A

$$\lim_{x \rightarrow 1} f(x) = 0, f(1) = 1$$

B

$$\lim_{x \rightarrow 1} f(x) = 1, f(1) = 1$$

C

$$\lim_{x \rightarrow 1} f(x) = 0, f(1) = 0$$

D

$$\lim_{x \rightarrow 1} f(x) = 1, f(1) = 0$$

12

Use the table to find $\lim_{x \rightarrow 2} f(x)$ and the value $f(2)$.

x	1.9	1.99	1.999	2	2.001	2.01	2.1
f(x)	1.9	1.99	1.999	4	2.001	2.01	2.1

A

$$\lim_{x \rightarrow 2} f(x) = 2, f(2) = 2$$

B

$$\lim_{x \rightarrow 2} f(x) = 4, f(2) = 2$$

C

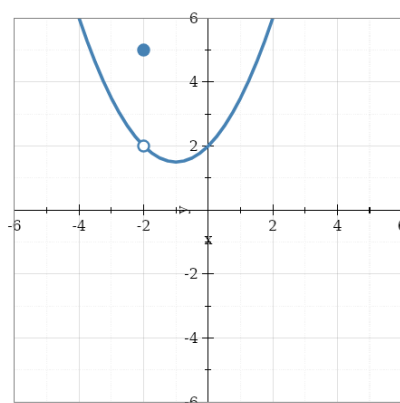
$$\lim_{x \rightarrow 2} f(x) = 4, f(2) = 4$$

D

$$\lim_{x \rightarrow 2} f(x) = 2, f(2) = 4$$

13

Use the graph to find $\lim_{x \rightarrow -2} f(x)$ and the value $f(-2)$.



A

$$\lim_{x \rightarrow -2} f(x) = 5, f(-2) = 2$$

B

$$\lim_{x \rightarrow -2} f(x) = 5, f(-2) = 5$$

C

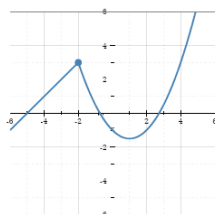
$$\lim_{x \rightarrow -2} f(x) = 2, f(-2) = 2$$

D

$$\lim_{x \rightarrow -2} f(x) = 2, f(-2) = 5$$



Identify discontinuities

14Is this function continuous at $x = -2$?

A Yes

B No

15Is this function continuous at $x = 2$?

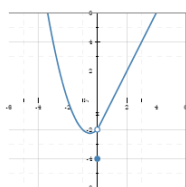
$$f(x) = \begin{cases} -2x + 7, & x \leq 2 \\ 2x - 1, & x > 2 \end{cases}$$

A

No

B

Yes

16For this piecewise function at $x = 0$: does the limit exist, and is the function continuous?

A The limit exists but the function is not continuous

B The limit does not exist and the function is not continuous

C The limit exists and the function is continuous

17For this piecewise function at $x = 0$: does the limit exist, and is the function continuous?

$$f(x) = \begin{cases} -x - 2, & x \leq 0 \\ -2x - 2, & x > 0 \end{cases}$$

A The limit does not exist and the function is not continuous

B The limit exists and the function is continuous

C The limit exists but the function is not continuous

18Is there a hole or a vertical asymptote at $x = -3$ when this polynomial is divided by this binomial?

$$f(x) = \frac{x^2 + 5x + 4}{x^2 + 7x + 12}$$

A Hole

B Neither

C Vertical Asymptote

19Is there a hole or a vertical asymptote at $x = -4$ when this polynomial is divided by this binomial?

$$f(x) = \frac{(x + 4)(x - 3)(x - 4)}{(x + 4)(x + 1)(x - 3)}$$

A Hole

B Vertical Asymptote

C Neither