

What you'll Learn About

Domain
X-values

Anytime Fractions
are involved set
bottom equal to
zero.

Square Root
Greater than
or equal to
Zero.

$x^2 \leq 9$ and $x^2 \geq -9$

Find the domain of the function algebraically. Support your answer graphically

A) $f(x) = x^2 - 9$
D: $(-\infty, \infty)$

B) $f(x) = \frac{3}{x} + \frac{7}{x-1}$
 $x=0$ $x-1=0$
 $x=1$

$(-\infty, 0) \cup (0, 1) \cup (1, \infty)$

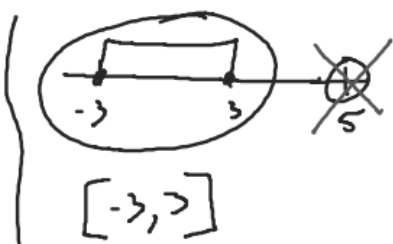
C) $f(x) = \frac{x}{x^2 + 2x - 3}$
 $x^2 + 2x - 3 = 0$
 $(x+3)(x-1) = 0$
 $x+3=0$ $x-1=0$
 $x=-3$ $x=1$

$(-\infty, -3) \cup (-3, 1) \cup (1, \infty)$

D) $f(x) = \frac{\sqrt{9-x^2}}{x-5}$
 $9-x^2 \geq 0$ $x-5=0$
 $9 \geq x^2$ $x=5$
 $x^2 \leq 9$

$-3 \leq x \leq 3$

E) $f(x) = \frac{\sqrt{1-x}}{(x-2)(x^2+4)}$
 $1-x \geq 0$ $x-2=0$ $x^2+4=0$
 $1 \geq x$ $x=2$ $x = -4$
 $x \leq 1$



$(-\infty, 1]$

Range
y-values

Determine the range of the function

A) $f(x) = 4 + x^2$

$R: [4, \infty)$

B) $f(x) = 2 + \sqrt{9-x}$

$R: [2, \infty)$

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

$(-\infty, -1) \cup [0, \infty)$

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

$(-2, 3/4]$

Graph the function and tell whether or not the function has a point of discontinuity at $x = 0$. If there is a discontinuity, tell whether the discontinuity is removable or non-removable.

A) $f(x) = \frac{5}{x}$

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

C) $f(x) = \frac{|5x|}{x}$

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