

Domain Restriction CYU

Use when you get it right all by yourself

S Use when you did it all by yourself, but made a silly mistake

H Use when you could do it alone with a little help from teacher or peer

G Use when you completed the problem in a group

X Use when a question was attempted but wrong (get help)

N Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Determining the domain restriction	1, 4, 9	2, 3	5 - 8, 10 - 15
Denominators with x	2, 5	8, 12	6, 11, 13, 15
Radicals with x	3, 4	6, 7, 11, 14	13, 15
Combination of denominator & radical with an x			6, 11, 13, 15

REMINDER: 3 rules when domain restriction is necessary.

1. Denominators cannot equal zero. So, set the denominator $\neq 0$ and solve. If a quadratic or higher degree function factor first and set each factor $\neq 0$. It can be more than one number that is restricted.
2. Since the even root of a negative number creates imaginary numbers we need to ensure that any even rooted radicand is ≥ 0 . This guarantees any radicand will not be negative.
3. This situation is a combination of the first two rules. When the first two rules are combined you cannot have a negative under a radical and you cannot have a value of zero in the denominator. So, we combine the two methods and set the denominator > 0 because it cannot be negative and it can no longer = 0.

Determine the domain for each function provided. Remember the rules above as well as real-world restrictions when applicable.

1. $f(x) = 3x^2 - 4$

2. $h(x) = \frac{2x+1}{x-1}$

3. $g(x) = \sqrt{2x - 5}$

4. $z(x) = \sqrt[3]{10x - 2}$

5. $w(x) = \frac{3}{x} + \frac{3}{x-1} + \frac{3}{x+1}$

6. $m(x) = \frac{\sqrt{1-x}}{\sqrt{1+x}}$

$$7. n(x) = \sqrt{x^2 - 5x + 6}$$

$$8. c(x) = \frac{1}{x^2 - 8x + 12}$$

$$9. v(t) = 1000 - \frac{1}{2}(-32.2)t^2$$

10. In the previous problem, if the function represents real-time velocity of an object t seconds after launch, how does that change the domain restriction?

$$11. j(x) = \sqrt{\frac{x-2}{x+3}}$$

$$12. f(x) = \frac{(2x+3)(x-3)}{(2x+3)}$$

$$13. k(x) = \sqrt[5]{\frac{x}{x-1}}$$

$$14. q(x) = \sqrt{x^3 + 4x^2 - 4x - 16}$$

$$15. p(x) = \sqrt{\frac{x^2-1}{x^2-4}}$$

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

