

Algebra 2 - Radical and Rational Equations - Worksheet

Common Core A-REI.A.2 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

These 20 problems practice radical and rational equations (Common Core A-REI.A.2). The first problems check isolating a radical or clearing a denominator, the middle problems add checking for extraneous solutions, and the last six are word problems and multi-step tasks that need work, distance, and free-fall applications.

Work in order and show every step. Write each answer in simplest form, and open the answer key only after you have tried the problem yourself.

Algebra 2 · Common Core State Standards: **A-REI.A.2**

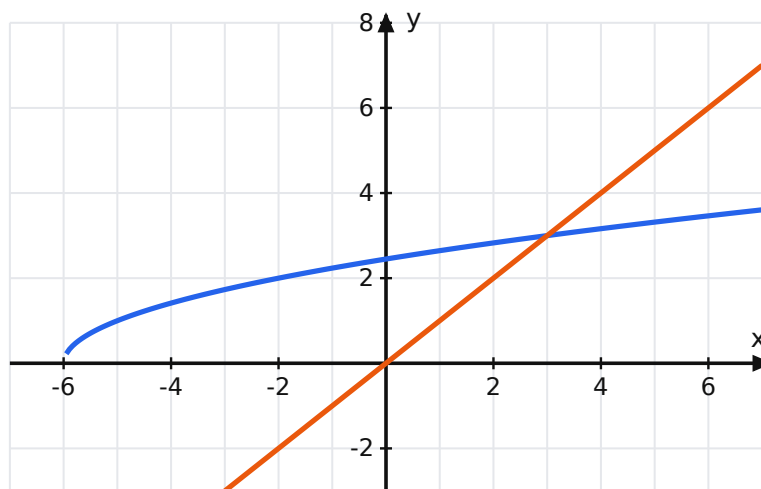
Exercise 1 - Basic radical equation

Solve $\sqrt{x+5}=4$.

Exercise 2 - Radical with a coefficient

Solve $\sqrt{2x-1}=5$.

Exercise 3 - Extraneous solution



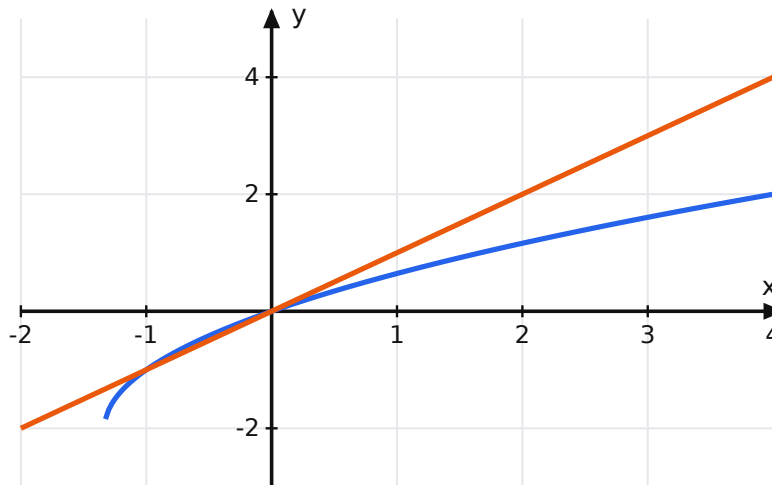
Graphs of both sides.

Solve $\sqrt{x+6} = x$. The graphs of both sides are shown.

Exercise 4 - Radical equal to a binomial

Solve $x-1 = \sqrt{x+11}$.

Exercise 5 - Both solutions valid



Graphs of both sides.

Solve $\sqrt{3x+4}-2 = x$ and check each answer.

Exercise 6 - Cube root equation

Solve $\sqrt[3]{x-3} = 2$.

Exercise 7 - Radicals on both sides

Solve $\sqrt{x+7} = \sqrt{2x-1}$.

Exercise 8 - Two radicals

Solve $\sqrt{x+3} + \sqrt{x} = 3$.

Exercise 9 - Proportion

Solve $\frac{6}{x} = \frac{3}{4}$.

Exercise 10 - Rational equation

Solve $\frac{3}{x+2} = \frac{1}{x}$.

Exercise 11 - Clear the fractions

Solve $\frac{2}{x} + \frac{1}{3} = 1$.

Exercise 12 - An extraneous solution

Step	Work
Multiply by $x - 2$	$x = 2 + 3(x - 2)$
Solve	$x = 2$
Check $x = 2$	denominator 0

Steps and check.

Solve $\frac{x}{x-2} = \frac{2}{x-2} + 3$. Decide if the candidate is valid.

Exercise 13 - Common denominator

Solve $\frac{1}{x-1} + \frac{1}{x+1} = \frac{4}{x^2-1}$.

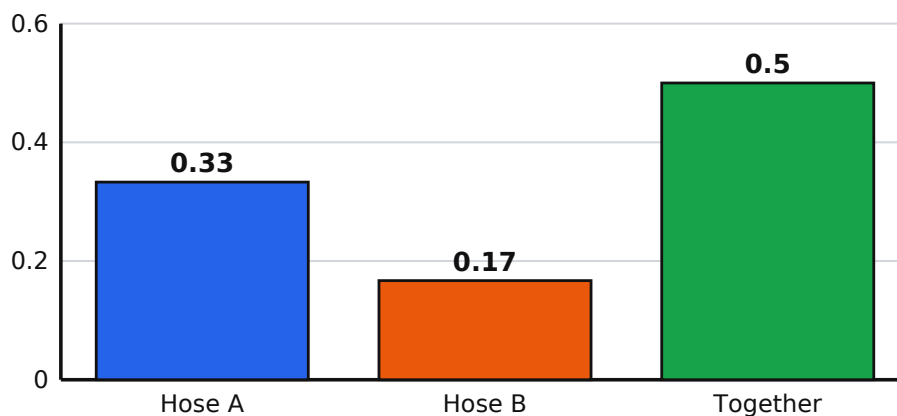
Exercise 14 - Both candidates excluded

Solve $\frac{x}{x+3} + \frac{3}{x-3} = \frac{18}{x^2-9}$.

Exercise 15 - Rational leads to a quadratic

Solve $\frac{6}{x} = x - 1$.

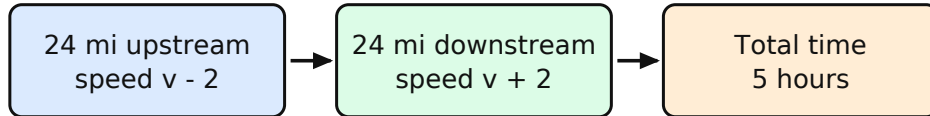
Exercise 16 - Filling a pool



Fill rates per hour.

Hose A fills Liam's pool 3 hours faster than hose B, and together they fill it in 2 hours. Write an equation for the time t that hose A needs alone, and find how long each hose takes alone.

Exercise 17 - Boat and current



A river trip.

A boat travels 24 miles upstream and 24 miles back downstream in 5 hours in a river with a 2 mph current. Find the boat's speed in still water. Use $\frac{24}{v-2} + \frac{24}{v+2} = 5$.

Exercise 18 - Free fall

The time in seconds for a ball to fall h feet is $t = \frac{\sqrt{h}}{4}$. Maya drops a ball and it takes 3 seconds to land. From what height was it dropped?

Exercise 19 - Skid marks

A car's speed in mph from skid marks of d feet is $s = \sqrt{24d}$. A car skidded and its speed was estimated at 36 mph. How long was the skid?

Exercise 20 - Find the error

Noah solved $\sqrt{x+6} = x$ and wrote $x=3$ or $x=-2$. He did not check. Explain what went wrong.