



Graphing Calculator Investigation

A Follow-Up of Lesson 9-6

Sharp EL-9600c

Solving Rational Equations by Graphing

You can use a graphing calculator to solve rational equations. You need to graph both sides of the equation and locate the point(s) of intersection. You can also use a graphing calculator to confirm solutions that you have found algebraically.

Example

Use a graphing calculator to solve $\frac{4}{x+1} = \frac{3}{2}$.

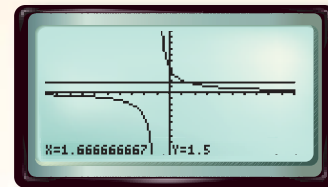
- First, rewrite as two functions, $y_1 = \frac{4}{x+1}$ and $y_2 = \frac{3}{2}$.
- Next, graph the two functions on your calculator.

KEYSTROKES: $Y=$ 4 \div ($X/\theta/T/n$ + 1) ∇ 3
 \div 2 **ZOOM** 5

- Next, locate the point(s) of intersection.

KEYSTROKES: **2nd F** [CALC] 2

The solution is $1\frac{2}{3}$. Check this solution by substitution.



[-10, 10] scl: 1 by [-10, 10] scl: 1

Exercises

Use a graphing calculator to solve each equation.

1. $\frac{1}{x} + \frac{1}{2} = \frac{2}{x}$ **2**

2. $\frac{1}{x-4} = \frac{2}{x-2}$ **6**

3. $\frac{4}{x} = \frac{6}{x^2}$ **1.5**

4. $\frac{1}{1-x} = 1 - \frac{x}{x-1}$

5. $\frac{1}{x+4} = \frac{2}{x^2+3x-4} - \frac{1}{1-x}$

6. **all real numbers except 1, 4**
 $\frac{1}{x-1} + \frac{1}{x+2} = \frac{2}{2}$

no real solution

Solve each equation algebraically. Then, confirm your solution(s) using a graphing calculator.

7. $\frac{3}{x} + \frac{7}{x} = 9$ **1 $\frac{1}{2}$**

11. $\frac{-3 \pm \sqrt{17}}{2}$ or about **-3.56 and 0.56**

8. $\frac{1}{x-1} + \frac{2}{x} = 0$ **$\frac{2}{3}$**

9. $1 + \frac{5}{x-1} = \frac{7}{6}$ **31**

10. $\frac{1}{x^2-1} = \frac{2}{x^2+x-2}$ **0**

11. $\frac{6}{x^2+2x} - \frac{x+1}{x+2} = \frac{2}{x}$

12. $\frac{3}{x^2+5x+6} + \frac{x-1}{x+2} = \frac{7}{x+3}$ **7**



www.algebra2.com/other_calculator_keystrokes