

Name:

Period:

key

Date:

Practice Worksheet: Solving Rational Equations

Solve each equation and check for extraneous solutions. You must show work and your answers must be correct to get credit.

Level 1	Level 2	Level 3
1] $\frac{x}{4} = \frac{9}{4x}$ $x = \pm 3$	5] $2 = \frac{x+2}{x-3}$ $x = 8$	9] $\frac{x^2+3}{7x} = \frac{x+1}{6}$ $x = -9 \quad x = 2$
2] $\frac{x}{4} = \frac{x+2}{2}$ $x = -4$	6] $\frac{x}{2x+1} = \frac{2x}{x+2}$ $x = 0$	10] $\frac{2}{x^2-x} = \frac{1}{x-1}$ $x = 2 \quad \cancel{x = 1}$
3] $\frac{4}{x} + 1 = \frac{2x+2}{x}$ $x = 2 \quad \cancel{x = 0}$	7] $\frac{9}{x} - 1 = \frac{3}{x} + 2$ $x = 2$	11] $\frac{x^2}{3x-1} + 2 = \frac{2(x-3)}{3x-1}$ $x = -2$
4] $\frac{2x}{x-2} + \frac{1}{x+2} = \frac{10}{x^2-4}$ $x = \frac{3}{2} \quad x = -4$	8] $\frac{x}{x-1} - \frac{1}{x-2} = \frac{2x-5}{x^2-3x+2}$ $\cancel{x = 2} \quad x = 3$	12] $\frac{x}{2x-1} - \frac{2}{2x+1} = \frac{x^2+20}{4x^2-1}$ $x = 6 \quad x = -3$

Review -> Solving Rational Equations

Level 5	$16] \frac{x^2}{x^2} + \frac{x+3}{x+3} = 3$	$X = -9$ $X = 3$
Level 4	$13] \frac{3x}{x+1} = \frac{x^2-1}{12} + 2$	$14] \frac{x}{x-2} = \frac{x^2-8x+12}{4} - \frac{x-6}{1}$ $17] \frac{x-3}{2x+1} + \frac{3x+5}{4x} = \frac{7x^2+12x-20}{6x^2+13x+5}$
	$15] \frac{1}{\frac{1}{x+1} + \frac{1}{x}} = \frac{5}{1}$	$18] \frac{4}{\frac{x-2}{2} + 2} = 12$
	$X = 5$ $X = -2$	$X = 6$ $X = -1$
	$X = 3$	$X = 12$ $X = 6$

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Practice Worksheet: Solving Rational Equations

Solve each equation and check for extraneous solutions. You must show work and your answers must be correct to get credit.

Level 1	Level 2	Level 3
1] $\frac{x}{4} = \frac{9}{4x}$ $4x^2 = 36$ $x^2 = 9$ $x = \pm 3$	5] $\frac{2}{1} = \frac{x+2}{x-3}$ $x+2 = 2x-6$ $8 = x$	$\frac{84}{-63}$ $\frac{12}{4}$ $-\frac{4}{3}$ 9] $\frac{x^2+3}{7x} = \frac{x+1}{6}$ $6x^2 + 18 = 7x^2 + 7x$ $0 = x^2 + 7x - 18$ $0 = (x+9)(x-2)$ $x = -9$ $x = 2$
2] $\frac{x}{4} = \frac{x+2}{2}$ $2x = 4x + 8$ $-8 = 2x$ $-4 = x$	6] $\frac{x}{2x+1} = \frac{2x}{x+2}$ $x^2 + 2x = 4x^2 + 2x$ $0 = 3x^2$ $x^2 = 0$ $x = 0$	10] $\frac{2}{x^2-x} = \frac{1}{x-1}$ $x^2 - x = 2x - 2$ $x^2 - 3x + 2 = 0$ $(x-2)(x-1) = 0$ makes den = 0 $x = 2$ $x = 1$
3] $\frac{4}{x} + 1 = \frac{2x+2}{x}$ $\frac{4+x}{x} = \frac{2x+2}{x}$ $4x + x^2 = 2x^2 + 2x$ $0 = x^2 - 2x$ $0 = x(x-2)$ $x = 0$	7] $\frac{9}{x} - 1 = \frac{3}{x} + 2$ $9 - 1x = 3 + 2x$ $6 = 3x$ $2 = x$	11] $\frac{x^2}{3x-1} + 2 = \frac{2(x-3)}{3x-1}$ $\frac{x^2 + 6x - 2}{3x-1} = \frac{2x-6}{3x-1}$ $x^2 + 6x - 2 = 2x - 6$ $x^2 + 4x + 4 = 0$ $x = -2$ $(x+2)^2 = 0$
4] $\frac{2x}{x-2} + \frac{1}{x+2} = \frac{10}{x^2-4}$ $\frac{2x(x+2) + x-2}{x^2-4} = 10$ $2x^2 + 5x - 2 = 10$ $2x^2 + 5x - 12 = 0$	8] $\frac{x}{x-1} - \frac{1}{x-2} = \frac{2x-5}{x^2-3x+2}$ $(x-2)(x-1)$ $x(x-2) - 1(x-1) = 2x-5$ $x^2 - 2x - 1x + 1 = 2x-5$ $x^2 - 5x + 6 = 0$ $(x-2)(x-3) = 0$	12] $\frac{x}{2x-1} - \frac{2}{2x+1} = \frac{x^2+20}{4x^2-1}$ $x(2x+1) - 2(2x-1) = x^2 + 20$ $2x^2 + x - 4x + 2 = x^2 + 20$ $x^2 - 3x - 18 = 0$ $(x-6)(x+3) = 0$

$(2x-3)(x+4) = 0$
 $x = 3/2$ $x = -4$

~~$x = 2$~~
 $x = 3$
 excluded value

$x = 6$ $x = -3$

