

Name:

Period:

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] $\frac{x}{4} = \frac{9}{4x}$ $x \neq 0$ $\frac{4x^2}{4} = \frac{36}{4}$ $\sqrt{x^2} = \sqrt{9}$ $x = \pm 3$	5] $\frac{2}{1} = \frac{x+2}{x-3}$ $x \neq 3$ $2(x-3) = 1(x+2)$ $2x-6 = x+2$ $-x = 8$ $x = -8$	9] $\frac{x^2+3}{7x} = \frac{x+1}{6}$ $x \neq 0$ $7x(x+1) = 6(x^2+3)$ $7x^2+7x = 6x^2+18$ $x^2+7x-18 = 0$ $(x+9)(x-2) = 0$ $x = -9, 2$
2] $\frac{x}{4} = \frac{x+2}{2}$ $2x = 4(x+2)$ $2x = 4x+8$ $-4x = 8$ $-2x = 8$ $-2 = 4$ $x = -4$	6] $\frac{x}{2x+1} = \frac{2x}{x+2}$ $x \neq -\frac{1}{2}, -2$ $x(x+2) = 2x(2x+1)$ $x^2+2x = 4x^2+2x$ $0 = -3x^2$ $0 = 3x^2$ $x = 0$	10] $\frac{2}{x^2-x} = \frac{1}{x-1}$ $x \neq 0, 1$ $2(x-1) = x^2-x$ $2x-2 = x^2-x$ $0 = x^2-3x+2$ $= (x-2)(x-1)$ $x = 2, 1$
3] $\frac{4}{x} + \frac{1x}{x} = \frac{2x+2}{x}$ $x \neq 0$ $4+x = 2x+2$ $-x = -2$ $x = 2$	7] $\frac{9}{x} - \frac{1x}{x} = \frac{3}{x} + \frac{2x}{x}$ $x \neq 0$ $9-x = 3+2x$ $-3 = x$ $6 = 3x$ $2 = x$	11] $\frac{x^2}{3x-1} + 2 = \frac{2(x-3)}{3x-1}$ $x \neq \frac{1}{3}$ $x^2+2(3x-1) = 2(x-3)$ $x^2+6x-2 = 2x-6$ $x^2+4x+4 = 0$ $(x+2)(x+2) = 0$ $x = -2$
4] $\frac{(x+2)2x}{(x+2)x-2} + \frac{1(x-2)}{x+2} = \frac{10}{x^2-4}$ $x \neq \pm 2$ $2x(x+2) + 1(x-2) = 10$ $2x^2+4x+x-2 = 10$ $2x^2+5x-12 = 0$ $(2x-3)(x+4) = 0$ $\frac{3}{2}, -4 = x$	8] $\frac{(x-2)x}{(x-2)x-1} - \frac{1(x-1)}{x-2} = \frac{2x-5}{x^2-3x+2}$ $x \neq 1, 2$ $(x^2-2x) - (x-1) = 2x-5$ $x^2-2x-x+1 = 2x-5$ $x^2-3x+1 = 2x-5$ $x^2-5x+6 = 0$ $(x-2)(x-3) = 0$ $x = 2, 3$	12] $\frac{x}{2x-1} - \frac{2}{2x+1} = \frac{x^2+20}{4x^2-1}$ $x \neq \frac{1}{2}, -\frac{1}{2}$ $x(2x+1) - 2(2x-1) = x^2+20$ $2x^2+x-4x+2 = x^2+20$ $x^2-3x-18 = 0$ $(x-6)(x+3) = 0$ $x = 6, -3$

$x = 2, 3$

$x = 3$