

$$\frac{x}{3} = \frac{2}{3}$$

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] $\frac{x}{4x} = \frac{9}{4x}$ $x^2 = 9$ $x = \pm 3$ $\frac{3}{4} = \frac{9}{4 \cdot 3}$ $\frac{-3}{4} = \frac{9}{4 \cdot 3}$	(x-3) $2 = \frac{x+2}{x-3}$ $2x - 6 = x + 2$ $x = 8$ $\frac{8+2}{8-3} = \frac{10}{5} = 2$ ✓	$\frac{6x^2+3}{67x} = \frac{x+17x}{67x}$ $\frac{2^2+3}{14} = \frac{2+1}{6}$ $6x^2 + 18 = 7x^2 + 7x$ $\frac{9^2+3}{9 \cdot 7} = \frac{9+1}{6}$ $0 = x^2 + 7x - 18$ $\frac{84}{63} = \frac{10}{6}$ $(x-2)(x+9)$ $x = 2, -9$
2] $\frac{x}{4} = \frac{x+2}{2}$ $x = 2x + 4$ $x = -4$ $\frac{-4}{4} = \frac{-4+2}{2} = \frac{-2}{2}$ ✓	(x+1) $\frac{x}{2x+1} = \frac{2x}{x+2}$ $\frac{2x+1}{2x+1}$ $x^2 + 2x = 4x^2 + 2x$ $x^2 = 4x^2$ $x = 0$ $\frac{0}{2 \cdot 0 + 1} = \frac{0}{0+2}$ ✓	10] $\frac{2}{x^2-x} = \frac{1}{x-1}$ $\frac{2}{x(x-1)} = \frac{1}{x-1}$ $2 = x$ $\frac{2}{4-2} = \frac{1}{2-1}$ $\frac{2}{2} = \frac{1}{1}$ ✓
3] $\frac{4}{x} + \frac{1}{x} = \frac{2x+2}{x}$ $\frac{4+x}{x} = \frac{2x+2}{x}$ $4+x = 2x+2$ $x = 2$ $\frac{4}{2} + 1 = \frac{2+2}{2}$ $3 = \frac{4}{2}$ ✓	7] $\frac{9}{x} - \frac{1}{x} = \frac{3}{x} + \frac{2x}{x}$ $\frac{9-x}{x} = \frac{3+2x}{x}$ $9-x = 3+2x$ $\frac{9}{2} - 1 = \frac{3}{2} + 2$ $6 = 3x$ $\frac{7}{2} = \frac{7}{2}$ ✓ $x = 2$	11] $\frac{x^2}{3x-1} + \frac{2}{3x-1} = \frac{2(x-3)}{3x-1}$ $x^2 + 6x - 2 = 2x - 6$ $x^2 + 4x + 4 = 0$ $(x+2)(x+2)$ $\frac{4}{4} + \frac{4}{4} = 2$ $x = -2$ ✓
(x+2) $\frac{2x}{x-2} + \frac{1(x-2)}{x+2} = \frac{10}{x^2-4}$ $\frac{10}{(x+2)(x-2)}$ $2x^2 + 4x + x - 2 = 10$ $2x^2 + 5x - 12 = 0$ $(2x-3)(x+4)$ $x = \frac{3}{2}, -4$	(x-2) $\frac{x}{x-1} - \frac{1(x-1)}{x-2} = \frac{2x-5}{(x-1)(x-2)}$ $x^2 - 2x - x + 1 = 2x - 5$ $x^2 - 5x + 6 = 0$ $(x-2)(x-3)$ $x = 2, 3$	(2x+1) $\frac{x}{2x-1} - \frac{2(2x-1)}{2x+1} = \frac{x^2+20}{4x^2-1}$ $2x^2 + x - 4x + 2 = x^2 + 20$ $x^2 - 3x - 18 = 0$ $(x+3)(x-6)$ $x = -3, 6$

Did You Hear About...



1. The	2. Fish	3. That	4. Decided	5. To	6. Quit	7. Smoked
8. Became	9. It	10. Didn't	11. Want	12. For	13. Get	14. Hooked

Solve the equation, then find your answer. Write the word next to the answer in the box that contains the exercise number.

$$15. \frac{x}{5} + \frac{2x}{5} = 4 \quad \frac{40}{10}$$

$$5x + 4x = 40$$

$$9x = 40 \quad x = \frac{40}{9}$$

$$2. \frac{35b}{34} - \frac{b}{34} = 2$$

$$15b - 4b = 24$$

$$11b = 24 \quad b = \frac{24}{11}$$

$$3. \frac{y}{9} + \frac{1}{9} = \frac{4}{9}$$

$$y + 1 = 36$$

$$y = 27$$

$$4. \frac{3}{8n} - \frac{1}{4n} = \frac{15}{8n}$$

$$24 - 2 = 15n$$

$$22 = 15n \quad n = \frac{22}{15}$$

$$5. \frac{7}{32a} + \frac{10}{32a} = \frac{56}{16a}$$

$$21 + 20 = 30a$$

$$41 = 30a \quad a = \frac{41}{30}$$

$$6. \frac{2a-8}{5} = \frac{4a}{5}$$

$$10a - 40 = 12a$$

$$-40 = 2a \quad a = -20$$

$$7. \frac{3x+1}{8} + \frac{4x}{4} = \frac{11}{4}$$

$$3x+1+4x = 22$$

$$7x = 21 \quad x = 3$$

$$8. \frac{4k-2}{4} - \frac{5k}{4} = \frac{7}{6}$$

$$4k-8-5k = 14$$

$$-11k = 22 \quad k = -2$$

$$9. \frac{4w+9}{10w} + \frac{5w}{5w} = \frac{1}{5}$$

$$4w+9+5w = 2$$

$$19w = -7 \quad w = -\frac{7}{19}$$

$$10. \frac{1+6h}{7h} - \frac{3h}{14h} = \frac{h+4}{2h}$$

$$2+12h-3h = 7h+28$$

$$2h = 26 \quad h = 13$$

$$11. \frac{5d-2}{5} + 2 = \frac{8}{5}$$

$$25d - 10 + 40 = 32$$

$$25d = 2 \quad d = \frac{2}{25}$$

$$12. \frac{11x-4}{2} - 1 = \frac{x+3}{2}$$

$$22x-8-18x = 9x+27$$

$$-5x = 35 \quad x = -7$$

$$13. \frac{1}{5}(3t-4) = \frac{1}{3}(t+12)$$

$$\frac{3t-4}{5} = \frac{t+12}{3}$$

$$14. \frac{5}{8}m - \frac{2}{3} = \frac{m+7}{12}$$

$$30m - 32m = 4m + 28$$

$$-2m = 4m + 28$$

$$-6m = 28$$

Rational Equations and Functions:
Solving Rational Equations With Monomial Denominators

$$9t - 12 = 5t + 60$$

$$4t = 72$$

$$t = 18$$

$$18.2 \quad m = -\frac{14}{3}$$

- ~~2/25 WANT~~
- ~~44/3 WHO~~
- 3 SMOKING
- ~~40/9 THE~~
- 10 THAT
- ~~22/15 DECIDED~~
- ~~-14/3 HOOKED~~
- ~~-15 WHEN~~
- ~~-25/4 CATCH~~
- ~~24/11 FISH~~
- ~~-2 BECAUSE~~
- ~~-20 QUIT~~
- ~~-7 TO~~
- ~~3/18 LINE~~
- 13 DIDN'T
- ~~41/30 TO~~
- 18 GET
- ~~-7/19 IT~~
- 27 THAT
- ~~5/16 BAIT~~

PUNCLINE • Algebra • Book B
©2006 Marcy Mathworks