# MATH 11009:   Extra Rational Equations

Solve for $x$:

1. $\dfrac{3x}{x-1} - \dfrac{2x}{x+2} = 0$

2. $\dfrac{3x-2}{x+8} = \dfrac{2}{3}$

3. $\dfrac{5x}{x^2-4} - \dfrac{x}{x-2} = 0$

4. $\dfrac{9x^4 - 10x^2 + 1}{3x+2} = 0$

5. $\dfrac{4}{x+3} - \dfrac{5}{x-2} = \dfrac{2}{x-2}$

6. $\dfrac{2x+5}{x-7} = \dfrac{1}{5}$

7. $\dfrac{5}{4x} + \dfrac{2}{3x^2} = \dfrac{1}{6}$

8. $\dfrac{5x-2}{7x+8} = 3$

9. $\dfrac{3x}{x^2-9} - \dfrac{2}{x+3} = \dfrac{5}{x-3}$

10. $\dfrac{2x}{x-2} + 5 = \dfrac{7}{x-2}$

11. $\dfrac{2x^2 - x - 6}{x^2 - 9} = 0$

12. $\dfrac{9x-1}{x+3} - 5 = 0$

13. $\dfrac{2x}{x-5} = \dfrac{x}{x+3}$

14. $\dfrac{14}{x^2-16} - \dfrac{1}{x-4} = \dfrac{x}{x+4}$

15. $\dfrac{x}{2(x-2)} - 2 = \dfrac{1}{x-2}$

16. $\dfrac{8x^3 + 4x^2 - 18x - 9}{9x+5} = 0$

17. $\dfrac{5}{2x^2+x} - \dfrac{7}{x^2} = 0$

18. $\dfrac{5}{x^2+8x+16} - \dfrac{3}{x^2-16} = 0$

19. $\dfrac{x^2+3x+6}{x^2+x+1} = 4$

20. $\dfrac{4}{3x-1} - \dfrac{2}{2x+3} = \dfrac{9}{10x+15}$

# ANSWERS

1. $x = 0, \ -8$

2. $x = 22/7$

3. $x = 0, \ 3$

4. $x = 1/3, \ -1/3, \ 1, \ -1$

5. $x = -29/3$

6. $x = -32/9$

7. $x = -1/2, \ 8$

8. $x = -13/8$

9. $x = -9/4$

10. $x = 17/7$

11. $x = 2, \ -3/2$

12. $x = 4$

13. $x = 0, \ -11$

14. $x = 5, \ -2$

15. No solution

16. $x = 3/2, \ -3/2, \ -1/2$

17. $x = -7/9$

18. $x = 16$

19. $x = 2/3, \ -1$

20. $x = 79/17$