

Practice 9-6

Solving Rational Equations

Solve each equation. Check each solution.

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|--|---|---|
| 1. $\frac{1}{x} = \frac{x}{9}$ | 2. $\frac{4}{x} = \frac{x}{4}$ | 3. $\frac{3x}{4} = \frac{5x + 1}{3}$ |
| 4. $-\frac{4}{x + 1} = \frac{5}{3x + 1}$ | 5. $\frac{3}{2x - 3} = \frac{1}{5 - 2x}$ | 6. $\frac{x - 4}{3} = \frac{x - 2}{2}$ |
| 7. $\frac{3}{1 - x} = \frac{2}{1 + x}$ | 8. $\frac{2x - 3}{4} = \frac{2x - 5}{6}$ | 9. $\frac{1}{x} = \frac{2}{x + 3}$ |
| 10. $\frac{x - 1}{6} = \frac{x}{4}$ | 11. $\frac{3 - x}{6} = \frac{6 - x}{12}$ | 12. $\frac{4}{x + 3} = \frac{10}{2x - 1}$ |
| 13. $\frac{x - 2}{10} = \frac{x - 7}{5}$ | 14. $\frac{3}{3 - x} = \frac{4}{2 - x}$ | 15. $\frac{1}{4 - 5x} = \frac{3}{x + 9}$ |
| 16. $x + \frac{10}{x - 2} = \frac{x^2 + 3x}{x - 2}$ | 17. $\frac{2}{x + 3} + \frac{5}{3 - x} = \frac{6}{x^2 - 9}$ | 18. $\frac{1}{2x + 2} + \frac{5}{x^2 - 1} = \frac{1}{x - 1}$ |
| 19. $\frac{2}{6x + 2} = \frac{x}{3x^2 + 11}$ | 20. $\frac{3}{2x - 4} = \frac{5}{3x + 7}$ | 21. $\frac{2y}{5} + \frac{2}{6} = \frac{y}{2} - \frac{1}{6}$ |
| 22. $\frac{1}{2x + 2} = \frac{1}{x - 1}$ | 23. $\frac{2}{x + 2} + \frac{5}{x - 2} = \frac{6}{x^2 - 4}$ | 24. $5 + \frac{5}{x} = \frac{6}{5x}$ |
| 25. $\frac{4}{x - 1} = \frac{5}{x - 2}$ | 26. $\frac{2x - 1}{x + 3} = \frac{5}{3}$ | 27. $\frac{7}{2} = \frac{7x}{8} - 4$ |
| 28. $5 - \frac{4}{x + 1} = 6$ | 29. $\frac{x}{x + 3} - \frac{x}{x - 3} = \frac{x^2 + 9}{x^2 - 9}$ | 30. $\frac{x}{3} + \frac{x}{2} = 10$ |
| 31. $\frac{2}{3} + \frac{3x - 1}{6} = \frac{5}{2}$ | 32. $4 + \frac{2y}{y - 5} = \frac{8}{y - 5}$ | 33. $\frac{4}{x - 3} = \frac{2}{x + 1} + \frac{16}{x^2 - 2x - 3}$ |
| 34. $\frac{7}{x^2 - 5x} + \frac{2}{x} = \frac{3}{2x - 10}$ | 35. $\frac{x + 3}{x^2 + 3x - 4} = \frac{x + 2}{x^2 - 16}$ | 36. $\frac{3y}{5} + \frac{1}{2} = \frac{y}{10}$ |
37. A round trip flight took 3.9 h flying time. The plane traveled the 510 mi to the city at 255 mi/h with no wind. How strong was the wind on the return flight? Was the wind a head wind or a tail wind?
38. A round trip flight took 5 h flying time. The plane traveled the 720 mi to the city at 295 mi/h with no wind. How strong was the wind on the return flight? Was the wind a head wind or a tail wind?
39. If one student can complete the decorations for the prom in 5 days working alone, another student could do it in 3 days, and a third could do it in 4 days, how long would it take them working together?
40. Tom and Huck start a business painting fences. They paint Aunt Polly's fence and find that they can paint a 200-ft² fence in 40 min if they work together. If Huck works four times faster than Tom, how long would it take each of them to paint a 500-ft² fence working alone?

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