

1. Resuelve la ecuación:

[Comp.det.]

- | | | |
|---|---|--|
| 1. $2(3x+3)-8 = 3(x-2)$ | 2. $6x-3(x-1)-4 = 2(x-1)$ | 3. $2(x-1)+1 = 2(x+1)+4x$ |
| 4. $4x-2(x-3) = 3(x-1)+8$ | 5. $1-2(3x-1) = x-2(3x-2)$ | 6. $7-3(x+1) = 4x-2(2x-1)$ |
| 7. $2(2x+1)-2(x-1) = 3x+2$ | 8. $2(x+1)-9x = 3-2(3x+1)$ | 9. $x-2(3x-2) = 2-2(2x-1)$ |
| 10. $2(3x-1)-2(x-2)-2 = 3x$ | 11. $2(2x+2)-1 = 7x-2(x-2)$ | 12. $2(3x+1)-x-9 = 3(2x-2)$ |
| 13. $5-2(2x+2) = 2(x+1)-5x$ | 14. $8-3(x+1) = 2(3x+2)-8x$ | 15. $12-3(x+2) = 3(x+2)-5x$ |
| 16. $2(x+1)-3(2x-2)+3x = 5$ | 17. $14x-2(2x-2) = 3(3x+2)$ | 18. $3(3x-3)+8 = 2(x-2)+8x$ |
| 19. $2-x = 2(3x+3)-2(3x+3)$ | 20. $3x-3(2x-3) = 11-2(x+1)$ | 21. $2(3x+3)-2(x-1)-2x = 11$ |
| 22. $3(3x+1)-6 = 2(x-3)+11x$ | 23. $3(2x-2)-3(2x+3) = x-16$ | 24. $3(3x+1)-10x+4 = 3(x+2)$ |
| 25. $2x-3(2x-3) = 12-2(x+3)$ | 26. $13x-3(x-2)-2(3x+2) = 5$ | 27. $3(2x+2)-4x-7 = 2(2x+1)$ |
| 28. $3(3x-2)-3(2x-3) -2x = 5$ | 29. $4-2(2x+3) = 7x-3(3x+1)$ | 30. $2(3x-3)-3(3x-3)+5x = 0$ |
| 31. $6x+13 = 2(x+3)+3(2x+2)$ | 32. $2(3x-2)-1 = 11x-2(2x+3)$ | 33. $7x-2(x-1)-2(2x-3)-7 = 0$ |
| 34. $3(2x-3)-2(x-1)-5x+7 = 0$ | 35. $3(2x-2)+2 = 16x-3(3x+1)$ | 36. $3(3x+3)-3(3x-2) = 2x+12$ |
| 37. $14-2(3x+3) = 3(2x+2)-11x$ | 38. $3(3x+2)-3(3x-3)-x-15 = 0$ | 39. $14x-18 = 3(3x-2)+3(3x-3)$ |
| 40. $3(3x+2)-17x = 13-3(2x+2)$ | 41. $14x-3(3x-1)-3(2x-1)-8 = 0$ | 42. $2(3x+2)-2(3x+2)+2x+1 = 0$ |
| 43. $12x-2(2x+1)-2(3x+1)+7 = 0$ | 44. $3(3x+3)-2(x-3)-10x-16 = 0$ | 45. $2(3x+3)+3(3x-2)-19x+3 = 0$ |
| 46. $1-x^2 = x(x-1)-x(2x-2)$ | 47. $2(x^2+2x)-2(x^2-1) = 5x+3$ | 48. $x^2-2(x^2+3x)+9x = 1-x(x-1)$ |
| 49. $4x^2-3x(x+3)+9x-2 = x(x+1)$ | 50. $2(x+2)+2x^2-5x = 2x(x-1)+5$ | 51. $3x(x+3)-3x(x-2)-16x+3 = 0$ |
| 52. $3x(x+1)-3x^2+2x-4 = 2(2x-1)$ | 53. $5x^2-2(2x^2-3x) = x(x-3)+10x$ | 54. $3x(x+3)-7x^2-14x = 2-2x(2x+2)$ |
| 55. $2(2x-1)-12x-1 = 9x^2-3(3x^2+3x)$ | 56. $13x^2-3x(3x+1)-4x = 2x(2x-2)+4$ | 57. $2(2x^2+x)-10x^2-2 = 7x-2(3x^2+2x)$ |
| 58. $3(2x+2)^2-18x^2-9 = 25x-2(3x^2+x)$ | 59. $15x^2-3(3x^2+2x)-1 = 3x(2x+1)-10x$ | 60. $2(2x+3)^2-21x-19 = 2(2x^2+2x)+4x^2$ |

2. Resuelve la ecuación:

[Comp.ind.]

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|-----------------------------------|-------------------------------------|--|
| 1. $3(x-2) = 3(x-1)-3$ | 2. $2(3x-3)-3(2x-3) = 3$ | 3. $3(x-1)+5 = 5x-2(x-1)$ |
| 4. $2(2x+3)-2(2x+2)-2 = 0$ | 5. $3(2x-2)-3(x-1) = 3x-3$ | 6. $2(2x+2)-3(x-2)-x = 10$ |
| 7. $2(x-1)+3(2x-3) = 8x-11$ | 8. $8x-3(2x-2)-12 = 2(x-3)$ | 9. $2(3x+3)-2(x-2)-4x = 10$ |
| 10. $10x-2(3x-1)-2(2x-3) = 8$ | 11. $3(3x+1)-3(x-2)-6x-9 = 0$ | 12. $12x-3(2x+1)-6 = 3(2x-3)$ |
| 13. $2x(3x-1)-2x^2 = 2x(2x-1)$ | 14. $15x-2(3x+3) = 3(3x-3)+3$ | 15. $3(x-1)+3(3x+3)-12x-6 = 0$ |
| 16. $2(3x+3)-15 = 12x-3(2x+3)$ | 17. $2(2x+1)-3(2x+2)+2x+4 = 0$ | 18. $7x^2-2(2x^2-3x)-3x = 3x(x+1)$ |
| 19. $3(2x+2)+2x(x-2)-6 = 2x^2+2x$ | 20. $3x(3x+3)-15x^2 = 12x-3x(2x+1)$ | 21. $3x(2x+3)-21x+2 = 2(3x-1)^2-12x^2$ |

3. Resuelve la ecuación:

[Incomp.]

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|------------------------------------|---------------------------------------|--|
| 1. $2(x-1)-2(x-2) = 3$ | 2. $3(x+2)-3(x-3)-11 = 0$ | 3. $2(x+2)-14 = 3(x-3)-x$ |
| 4. $3(x+1)+3(x-2)-6x = 0$ | 5. $6x-3(x+3)+17 = 3(x+1)$ | 6. $2(2x+3)-11 = 6x-2(x+1)$ |
| 7. $3x-2(3x-2) = 11-3(x+2)$ | 8. $3(x+1)-3(2x-3) = 16-3x$ | 9. $2(x+2)+2x-11 = 2(2x-3)$ |
| 10. $3(2x-2)-3(x+3)+18 = 3x$ | 11. $2x+1 = 3(2x+3)-2(2x+3)$ | 12. $11x-10 = 3(3x-2)+2(x-1)$ |
| 13. $2(3x-2)-10x = 3-2(2x+3)$ | 14. $15x-3(3x-2)-16 = 3(2x-2)$ | 15. $15x-3(2x-3)-3(3x+3)+1 = 0$ |
| 16. $2(3x^2-3)-x+13 = x(x-1)+5x^2$ | 17. $3(2x+3)+3(3x+2)-15x-10 = 0$ | 18. $8x^2-3(2x^2+x)-3 = 2x(x-2)+x$ |
| 19. $x(3x-1)-2x(3x+2)+5x = 7-3x^2$ | 20. $3(x^2+2x)+2(2x^2+x)-7x^2 = 8x-6$ | 21. $2(3x+1)^2-18x^2-18x = 14-3(2x+2)$ |

4. Resuelve la ecuación:

[Comp.det.]

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|---|--|--|
| 1. $\frac{x+1}{2} - \frac{7}{6}x + \frac{x+1}{3} = 1$ | 2. $\frac{x+1}{5} + x-1 = \frac{3x-1}{2} - \frac{7}{10}$ | 3. $\frac{x+1}{2} + \frac{x-2}{4} - x = 1 - \frac{x+7}{8}$ |
| 4. $\frac{3x+1}{6} - \frac{x-1}{2} = 1 - \frac{4x+3}{18}$ | 5. $\frac{6x+1}{8} - \frac{3x-2}{4} = x - \frac{x-1}{2}$ | 6. $\frac{2x+1}{8} + \frac{3x-1}{4} + \frac{x+1}{2} = x$ |

$$7. \frac{x+3}{6} + 1 = \frac{x+3}{2} - \frac{14x-3}{30}$$

$$10. 1 - \frac{x+3}{9} - \frac{4x+1}{9} = \frac{x+1}{2} - x$$

$$13. \frac{8x+1}{24} + \frac{x+3}{2} + \frac{x+3}{8} - x = 2$$

$$16. \frac{x-2}{4} - \frac{4x-5}{8} - \frac{2x-1}{2} + x = 1$$

$$19. \frac{4x+11}{16} + \frac{3}{8}(x+1) - \frac{x-2}{2} = 2$$

$$22. \frac{4x+1}{6} + \frac{x+3}{2} - \frac{2x-3}{3} - x = 2$$

$$25. x - \frac{x+1}{8} - \frac{3}{4}(x-1) - \frac{3x-7}{16} = 1$$

$$28. \frac{3x+1}{6} - \frac{2}{15}(x-5) - 1 = \frac{3x-2}{10}$$

$$31. \frac{3x+1}{2} + \frac{x+1}{4} - 2x = 1 - \frac{5x+4}{8}$$

$$34. 2x - \frac{2x+15}{10} - \frac{2x-3}{5} = \frac{3x-1}{2}$$

$$37. 2x - \frac{2x+1}{2} - \frac{5x+2}{10} = \frac{3x+1}{5} - 1$$

$$40. \frac{5x+12}{16} + \frac{3x+1}{2} - \frac{3x-2}{4} - x = 2$$

$$43. \frac{7}{10}(x+3) + \frac{2x-3}{2} + \frac{3x-1}{5} = 2x$$

$$46. \frac{x-2}{6} + 2\left(2x - \frac{3x+2}{2}\right) - \frac{2x+1}{3} = x-2$$

$$49. \frac{2}{3}\left(x - \frac{2x-1}{3}\right) + \frac{x+1}{3} - x = 1 - \frac{14x+11}{27}$$

$$52. \frac{13x+11}{16} + 2\left(2x - \frac{x-2}{2}\right) + \frac{x+1}{4} = 4x+3$$

$$55. \frac{13}{20}(x+1) - \frac{2}{5}\left(\frac{x-2}{2} - x-2\right) + \frac{x+2}{10} - x = 2$$

$$58. \frac{x+12}{27} - \frac{2}{3}\left(\frac{2x+1}{3} - 3x-3\right) + \frac{x+2}{3} - 2x = 3$$

$$8. \frac{3x+1}{2} - \frac{x-2}{5} - \frac{11x-4}{10} = 1$$

$$11. \frac{x+2}{2} - x-1 = \frac{x+1}{5} - \frac{6x+1}{10}$$

$$14. \frac{3x+7}{20} + \frac{x+3}{10} + \frac{3}{5}(x-1) = x$$

$$17. \frac{4x+11}{18} + \frac{2}{9}(x-1) + \frac{x-1}{2} = x$$

$$20. \frac{x+3}{2} - \frac{x-2}{3} - \frac{2}{3}(x-1) + x = 3$$

$$23. \frac{4x+3}{5} - \frac{x-2}{15} + \frac{3x+2}{10} - x = 1$$

$$26. \frac{3x+1}{2} - \frac{x+1}{9} - \frac{7}{18}(4x-1) = 1$$

$$29. \frac{7}{8}(x+1) + \frac{2x-1}{4} - \frac{x-2}{2} - x = 2$$

$$32. 2x - \frac{3x+1}{2} - 1 = \frac{5x-3}{8} - \frac{x+3}{4}$$

$$35. \frac{2}{5}(x+1) - x-1 = \frac{x-2}{10} - \frac{15x+7}{20}$$

$$38. \frac{3x-11}{10} + \frac{2x+1}{2} + \frac{2}{5}(x+1) = 2x$$

$$41. 2x - \frac{3x-1}{3} - \frac{x+1}{6} - \frac{14x-17}{18} = 1$$

$$44. 1 - \frac{3}{4}(x-1) - \frac{7x+5}{8} = \frac{3x+2}{2} - 3x$$

$$47. 3\left(x - \frac{3x-1}{2}\right) - \frac{x-4}{10} - \frac{3}{5}(x+1) + 2x = 1$$

$$50. \frac{3}{2}\left(\frac{x}{2} - 2x+1\right) + 2x - \frac{3x-4}{8} = 3 - \frac{x+2}{2}$$

$$53. \frac{x+11}{12} - 2\left(\frac{2x-1}{3} - 3x-3\right) + \frac{x-1}{2} - 5x = 7$$

$$56. \frac{1}{3}\left(\frac{x+1}{2} - 2x-1\right) - \frac{7}{12}(x-1) + \frac{x+2}{3} + x = 1$$

$$59. \frac{3}{2}\left(\frac{x+1}{2} - 3x+3\right) - \frac{18x-11}{20} + \frac{x-2}{2} = 5-4x$$

$$9. \frac{3x+7}{12} - \frac{x-1}{2} + \frac{2x+3}{4} = 2$$

$$12. \frac{2x+3}{2} - \frac{x-4}{8} - \frac{3}{4}(x+1) = 3$$

$$15. x - \frac{x-3}{20} - \frac{3x-3}{4} - 1 = \frac{3x-1}{5}$$

$$18. \frac{13x+2}{18} + \frac{x+1}{6} + \frac{x+2}{3} - x = 1$$

$$21. \frac{x+2}{4} - \frac{x-2}{2} + x-2 = \frac{13x-8}{16}$$

$$24. 2x - \frac{3x-2}{2} - 2 = \frac{3x-2}{4} - \frac{11}{6}$$

$$27. 1 - \frac{7x+1}{8} - \frac{2x+1}{4} = \frac{x+2}{2} - 2x$$

$$30. x - \frac{2x-3}{9} - \frac{x-1}{3} - \frac{11x-10}{27} = 1$$

$$33. \frac{13x-14}{20} + \frac{x-2}{2} - x+2 = \frac{x+3}{10}$$

$$36. \frac{x-1}{4} - \frac{8x+11}{16} + 2 = \frac{3x+2}{2} - 2x$$

$$39. \frac{x-3}{5} + \frac{3}{2}(x-1) + 3 = 2x - \frac{4x-9}{10}$$

$$42. \frac{2x+1}{3} - \frac{3x-1}{9} - x = 1 - \frac{19x+15}{27}$$

$$45. \frac{25x+12}{30} + \frac{2x+1}{2} + \frac{2}{15}(x+1) - 2x = 1$$

$$48. \frac{3}{5}(x-1) - 3\left(x - \frac{x+3}{6}\right) - \frac{4x-3}{30} + 2x = 1$$

$$51. \frac{3x+2}{5} - 3\left(\frac{3x}{2} - x-1\right) - \frac{4}{5}(x-1) + 2x = 4$$

$$54. x - \frac{1}{4}\left(\frac{2x-3}{2} - 2x+3\right) - \frac{x-2}{2} - \frac{8x-5}{16} = 1$$

$$57. \frac{3}{16}(x+4) - 2\left(\frac{3x-1}{2} - 2x-2\right) - \frac{x+3}{4} - x = 5$$

$$60. \frac{3}{5}\left(\frac{3x-1}{2} - x+1\right) - \frac{12x-11}{20} - \frac{3x-2}{2} = 2-2x$$

5. Resuelve la ecuación:

[Comp.ind.]

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

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

$$7. 2x - \frac{x+3}{2} - \frac{5x+3}{6} = \frac{2x-3}{3} - 1$$

$$10. \frac{3}{4}x - \frac{1}{2}\left(\frac{x}{2} - 2x-2\right) + \frac{3x+2}{2} - 3x = 2$$

$$2. x - \frac{x+3}{6} - \frac{x-3}{3} - \frac{x-1}{2} = 1$$

$$5. \frac{3}{4}x + \frac{3x+2}{4} + \frac{x+1}{2} - 2x = 1$$

$$8. \frac{2x+1}{3} + \frac{3}{2}(x+1) - \frac{x-1}{6} - 2x = 2$$

$$11. \frac{17x+11}{18} + \frac{1}{3}\left(2x - \frac{x+1}{3}\right) + \frac{x+1}{2} - 2x = 1$$

$$3. \frac{7x-12}{10} + \frac{x+2}{2} - \frac{x-1}{5} = x$$

$$6. \frac{2x+3}{5} - \frac{4x+1}{10} + 1 = \frac{2x+3}{2} - x$$

$$9. \frac{9x+1}{10} + \frac{3x+1}{2} - \frac{2x+3}{5} - 2x = 0$$

$$12. 3\left(\frac{3x+3}{2} - 2x+3\right) - \frac{x-3}{10} - \frac{2x-1}{5} + 2x = 14$$

6. Resuelve la ecuación:

[Incomp.]

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

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

$$3. \frac{6x+5}{8} + \frac{x+1}{2} - \frac{x-1}{4} - x = 1$$

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

$$7. \frac{x-2}{2} - \frac{3}{4}(x-1) - \frac{6x-7}{8} + x = 1$$

$$10. \frac{3x-2}{3} - \frac{3x-5}{6} + x = 1 - 3\left(\frac{x+2}{2} - x - 1\right)$$

$$5. \frac{3}{2}(x+1) - \frac{x-1}{8} - \frac{22x-5}{16} = 2$$

$$8. 2x - \frac{7x-4}{10} - 2 = \frac{3x-2}{2} - \frac{x+1}{5}$$

$$11. \frac{6x-17}{8} - \frac{3}{2}\left(x - \frac{3x+2}{2}\right) + \frac{3x+1}{2} = 3x$$

$$6. \frac{3}{10} + \frac{3}{2}(x+1) - \frac{2x+3}{4} = x+1$$

$$9. \frac{2x-3}{8} - \frac{12x+11}{16} + x+2 = \frac{x+2}{2}$$

$$12. 2 - \frac{1}{2}\left(\frac{3x}{4} - \frac{2x-3}{2}\right) - \frac{6x+13}{16} = \frac{3x+1}{4} - x$$

7. Resuelve la ecuación:

[Comp.det.]

$$1. \frac{2x+1}{4x} + \frac{1}{4}\left(1 + \frac{x-1}{x-2}\right) = 1$$

$$2. \frac{x^2-x+7}{x^2-1} + \frac{x-3}{x-1} - \frac{x-1}{x+1} = 1$$

$$3. \frac{x+8}{x+3} + \frac{x+2}{x}\left(2 - \frac{x+7}{x+3}\right) = 2$$

$$4. \frac{x^2+x-5}{x^2+3x} + \frac{x+5}{x+3} + \frac{x+1}{x} = 3$$

$$5. \frac{x+1}{x+2} + \frac{x^2+x-8}{x^2-4} + \frac{x-1}{x-2} = 3$$

$$6. \frac{x^2+x-5}{x^2-x-6} + \frac{x-5}{x-3} + \frac{x+1}{x+2} = 3$$

$$7. 3 - \frac{x-8}{x-3} - \frac{x^2+x+1}{x^2-4x+3} = \frac{x}{x-1}$$

$$8. \frac{x^2+x+1}{x^2-3x+2} + \frac{x}{x-1} + \frac{x-6}{x-2} = 3$$

$$9. 3 - \frac{x-9}{x-2} - \frac{x^2-x-5}{x^2-5x+6} = \frac{x+1}{x-3}$$

$$10. \frac{x+1}{x-2} + \frac{x^2+x-17}{x^2-x-2} + \frac{x-3}{x+1} = 3$$

$$11. \frac{x+1}{x-3} + \frac{x^2+x-17}{x^2-2x-3} = 3 - \frac{x-3}{x+1}$$

$$12. \frac{x^2-x-31}{x^2+x-6} + \frac{x+1}{x-2} + \frac{x-3}{x+3} = 3$$

$$13. \frac{5}{3} - \frac{x-2}{x-1} = \frac{x+2}{3x+3} + \frac{x^2+x+1}{3x^2-3}$$

$$14. \frac{x^2+x+2}{3x^2+x} + \frac{3x-4}{9x+3} = \frac{5}{3} - \frac{x+1}{x}$$

$$15. 2 - \frac{(x+3)(x-2)}{2x^2+x-3} - \frac{x+1}{2x+3} = \frac{x}{x-1}$$

$$16. \frac{2x+5}{2x+4} + \frac{2x-11}{2x-4} + \frac{x^2+x+1}{x^2-4} = 3$$

$$17. \frac{7}{8} - \frac{4x-1}{12x-8} - \frac{1}{8}\left(\frac{x}{3x+2} + 4\right) = 0$$

$$18. \frac{x^2+x-5}{2x^2+3x-2} + \frac{x+1}{x+2} + \frac{x+1}{2x-1} = 2$$

$$19. \frac{x+1}{2x-1} + \frac{x^2+x-8}{2x^2+5x-3} + \frac{x+4}{x+3} = 2$$

$$20. \frac{x-13}{2x-3} + \frac{(x+4)(x-3)}{2x^2-7x+6} + \frac{x+1}{x-2} = 2$$

$$21. \frac{1}{6}\left(\frac{5}{2} + \frac{2x+9}{4x+2}\right) + \frac{3x+2}{3x-3} - \frac{3}{2} = 0$$

$$22. \frac{x+1}{x+3} + \frac{x+4}{2x-3} = 2 - \frac{x^2+x-26}{2x^2+3x-9}$$

$$23. \frac{2x+15}{2x+6} + \frac{2x-1}{2x-2} = 3 - \frac{x^2+x+1}{x^2+2x-3}$$

$$24. \frac{3x-7}{3x-6} - 1 = \frac{x-1}{3x-1} - \frac{3x^2-3x+2}{9x^2-21x+6}$$

$$25. \frac{x+1}{2x+1} + \frac{2x+5}{2x+2} + \frac{2x^2+2x+1}{4x^2+6x+2} = 2$$

$$26. \frac{2}{6x-3} - \frac{1}{3x-6} = \frac{1}{2x-1}\left(2 - \frac{x-5}{x-2}\right)$$

$$27. \frac{5}{3} - \frac{3x+25}{9x+6} - \frac{x^2+x+1}{3x^2+5x+2} = \frac{x-1}{x+1}$$

$$28. \frac{3x+23}{9x+3} + \frac{x+1}{x+2} = \frac{5}{3} - \frac{x^2+x-11}{3x^2+7x+2}$$

$$29. \frac{3x^2-3x-16}{9x^2+30x+9} + \frac{3x+13}{3x+9} - \frac{x-1}{3x+1} = 1$$

$$30. \frac{5}{3} - \frac{x^2+x+1}{3x^2+x-2} - \frac{15x-23}{45x-30} = \frac{5x+7}{5x+5}$$

8. Resuelve la ecuación:

[Sol. falsa]

$$1. \frac{x^2+x-10}{x^2+2x-3} + \frac{x+1}{x+3} + \frac{x+1}{x-1} = 3$$

$$2. \frac{x+6}{x+2} + \frac{x}{x+1} + \frac{x^2+x+1}{x^2+3x+2} = 3$$

$$3. \frac{4}{3} - \frac{x^2+x+2}{6x^2-3x} - \frac{x-6}{6x-3} = \frac{x+1}{x}$$

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

$$5. \frac{x^2+x-3}{2x^2-3x+1} + \frac{x-5}{2x-1} + \frac{x+1}{x-1} = 2$$

$$6. \frac{x^2+x+1}{x^2+x-6} + \frac{5x-17}{5x-10} + \frac{5x+27}{5x+15} = 3$$

$$7. 3 - \frac{5x-23}{5x-15} + \frac{x^2+x+1}{x^2-x-6} = \frac{5x+13}{5x+10}$$

$$8. \frac{2x^2+2x-9}{4x^2+6x-4} + \frac{2x+5}{2x+4} + \frac{x+1}{2x-1} = 2$$

$$9. \frac{x+4}{2x-1} + \frac{(x+4)(x-3)}{2x^2+3x-2} + \frac{x+1}{x+2} = 2$$

$$10. \frac{2x+15}{2x+6} + \frac{2x+1}{2x+2} + \frac{x^2+x+1}{x^2+4x+3} = 3$$

$$11. \frac{1}{2x-2} - \frac{1}{x+3}\left(2 - \frac{x-3}{x-1}\right) = \frac{1}{2x+6}$$

$$12. 2 - \frac{1}{x+1}\left(2x+4 - \frac{x^2+x-6}{x-1}\right) = \frac{x-3}{x-1}$$

9. Resuelve la ecuación:

[Comp.ind.]

$$1. \frac{x}{x-1} + \frac{x+1}{x+2} = 3 - \frac{x^2+x-5}{x^2+x-2}$$

$$2. \frac{x+2}{x-2} - \frac{x^2+x-10}{x^2-4} + \frac{x-1}{x+2} = 1$$

$$3. \frac{x}{x+3} + \frac{x+1}{x-2} = 3 - \frac{x^2+x-21}{x^2+x-6}$$

$$4. \frac{2}{x-1} - \frac{1}{x+1} = \frac{1}{x+1}\left(2 - \frac{x-5}{x-1}\right)$$

$$5. \frac{x+10}{x+3} + \frac{x-1}{x+2} = 3 - \frac{x^2+x+1}{x^2+5x+6}$$

$$6. \frac{x+1}{x+2} + \frac{x^2+x-3}{2x^2+7x+6} + \frac{x+6}{2x+3} = 2$$

$$7. \frac{1}{x+3} \left(2 - \frac{x-7}{x-3} \right) - \frac{2}{3x-9} = \frac{1}{3x+9}$$

$$8. \frac{5}{3} - \frac{x^2+x-10}{3x^2-2x-1} - \frac{3x-22}{9x+3} = \frac{x+1}{x-1}$$

$$9. \frac{x^2+x+1}{x^2-2x-3} + \frac{4x-25}{4x-12} + \frac{4x+5}{4x+4} = 3$$

$$10. \frac{5}{4} - \frac{x+1}{2x+1} - \frac{4x^2+4x+5}{16x^2-4} = \frac{2x-3}{4x-2}$$

$$11. \frac{5}{3} - \frac{2x-5}{2x-2} - \frac{x^2+x+1}{3x^2-4x+1} = \frac{6x+11}{18x-6}$$

$$12. \frac{x-1}{3x+2} + \frac{3x+8}{3x+9} - \frac{3x^2+3x-11}{9x^2+33x+18} = 1$$

10. Resuelve la ecuación:

[Incomp.]

$$1. \frac{x+5}{x+2} + \frac{x-2}{x} + \frac{x^2+x+1}{x^2+2x} = 3$$

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

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

$$4. \frac{5}{x} - \frac{9}{2x-1} - \frac{1}{x} \left(1 - \frac{x-2}{2x-1} \right) = 0$$

$$5. \frac{x-2}{x+3} + \frac{x+1}{x-3} = 3 - \frac{x^2+x-29}{x^2-9}$$

$$6. \frac{x+4}{x+1} + \frac{x+1}{x+2} = 3 - \frac{x^2+x+2}{x^2+3x+2}$$

$$7. \frac{3}{4x+2} - \frac{1}{2x} \left(1 - \frac{x}{2x+1} \right) = \frac{1}{2x}$$

$$8. \frac{(x+5)(x-4)}{x^2+x-6} + \frac{x}{x+3} + \frac{x+1}{x-2} = 3$$

$$9. \frac{3}{2} - \frac{4x^2+4x+13}{8x^2+20x-12} - \frac{4x+15}{4x+12} = 0$$

$$10. \frac{3x-4}{3x-3} + \frac{3x-1}{6x+3} + \frac{x^2+x+1}{2x^2-x-1} = 2$$

$$11. 3 - \frac{x+4}{x-2} - \frac{x^2+x+1}{x^2-5x+6} - \frac{x-15}{x-3} = 0$$

$$12. \frac{3x-4}{3x+3} + \frac{x+1}{3x-9} = \frac{5}{3} - \frac{x^2+x-21}{3x^2-6x-9}$$

—Soluciones—

1.1. $-\frac{4}{3}$ 1.2. -1 1.3. $-\frac{3}{4}$ 1.4. 1 1.5. -1 1.6. $\frac{2}{3}$ 1.7. 2 1.8. 1 1.9. 0 1.10. 0 1.11. -1 1.12. -1 1.13. -1 1.14. 1 1.15. 0 1.16. 3 1.17. 2 1.18. 3
1.19. 2 1.20. 0 1.21. $\frac{3}{2}$ 1.22. $\frac{3}{4}$ 1.23. 1 1.24. $\frac{1}{4}$ 1.25. $\frac{3}{2}$ 1.26. $\frac{3}{4}$ 1.27. $-\frac{3}{2}$ 1.28. 2 1.29. $\frac{1}{2}$ 1.30. $-\frac{3}{2}$ 1.31. $\frac{1}{2}$ 1.32. 1 1.33. -1 1.34. 0 1.35.
-1 1.36. $\frac{3}{2}$ 1.37. 2 1.38. 0 1.39. $-\frac{3}{4}$ 1.40. $-\frac{1}{2}$ 1.41. -2 1.42. $-\frac{1}{2}$ 1.43. $-\frac{3}{2}$ 1.44. $-\frac{1}{3}$ 1.45. $\frac{3}{4}$ 1.46. 1 1.47. -1 1.48. $\frac{1}{2}$ 1.49. -2 1.50. -1 1.51. 3
1.52. 2 1.53. 0 1.54. -2 1.55. 3 1.56. $-\frac{4}{3}$ 1.57. -2 1.58. -3 1.59. 1 1.60. -1 2.1. comp.ind. 2.2. comp.ind. 2.3. comp.ind. 2.4. comp.ind. 2.5.
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