

FRACCIONES ALGEBRAICAS

Simplificar:

$$1. \frac{3 - 12a^2}{9 + 36a + 36a^2}$$

$$2. \frac{(xy)^5 - (xy)^8}{(xy)^6 - (xy)^9}$$

$$3. \frac{2ab^2 - 6bc}{4a^2b - 12ac}$$

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

$$5. \frac{x^3y^2 - 5x^3y^3}{x^5y^3 - 5x^5y^4}$$

$$6. \frac{15x + 15}{10x + 10}$$

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

$$8. \frac{2x^3 - 6x^2}{ax - 3a}$$

$$9. \frac{15x^4y - 15x^3y + 30xy}{3x^3y - 9x^2y + 3xy}$$

$$10. \frac{a^2b^4 - ab^4}{a^4b^4 - a^4b^3}$$

$$11. \frac{3a^2b - 5ab}{6a^3b^2 - 10a^2b^2}$$

$$12. \frac{x^2 + x}{x^2 + 2x + 1}$$

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

$$14. \frac{x^2 - 1}{x^2 + 2x + 1}$$

$$15. \frac{3x - 9}{x^2 - 9}$$

$$16. \frac{5x^2 + 10x}{3x^4 + 12x^3 + 12x^2}$$

$$17. \frac{x^2 - 1}{x^4 - 1}$$

$$18. \frac{2x^3 - 6x^2}{x^2 - 6x + 9}$$

$$19. \frac{5ab}{15a + 10a^2}$$

$$20. \frac{4x^2 - 8x}{4x}$$

$$21. \frac{2z^3 - 12z^2 + 18z}{4z^3 - 36z}$$

$$22. \frac{ab - bx}{a^2 - x^2}$$

$$23. \frac{(ab)^3}{(ab)^3 - (ab)^4}$$

$$24. \frac{a^2 - 2ab + b^2}{3a - 3b}$$

$$25. \frac{18a - 3ab}{6a^2}$$

$$26. \frac{8x^2 - 2}{16x^2 - 16x + 4}$$

$$27. \frac{(xy)^3 - (xy)^6}{(xy)^8}$$

$$28. \frac{15ab - 3ac}{10b^2 - 2bc}$$

Operar y simplificar:

$$29. \frac{1}{ab} + \frac{1}{b} - \frac{1}{a}$$

$$30. \frac{1}{xy} + \frac{1}{x^2y} + \frac{1}{y^2}$$

$$31. \frac{1}{x} - \frac{1}{x-1}$$

$$32. \frac{1}{x+2} - \frac{1}{x-2}$$

$$33. \frac{3}{x-3} - \frac{1}{x+2}$$

$$34. \frac{2}{x+3} - \frac{3}{x-3} + \frac{3x+10}{x^2-9}$$

$$35. \frac{a}{b} \cdot \frac{a^2}{b^3}$$

$$36. \frac{x+1}{x^2-2x+1} \cdot \frac{x^2-1}{x^3}$$

$$37. \frac{a^2b^3}{c^2} \cdot \frac{c^3a}{b^4}$$

$$38. \frac{x+1}{x-1} \cdot \frac{x^2+1}{x^2-1}$$

$$39. \frac{x-2}{x+2} \cdot \frac{x^2-4}{x^2+4x+4}$$

$$40. \frac{x}{y} \cdot \frac{x+1}{y+1}$$

$$41. \left(\frac{a}{b} \cdot \frac{a}{c}\right) \cdot \frac{a}{d}$$

$$42. \frac{a}{b} \cdot \left(\frac{a}{c} \cdot \frac{a}{d}\right)$$

$$43. \frac{1}{x+2} - \frac{1}{x^2+4x+4}$$

$$44. \frac{1}{x+3} - \frac{1}{x-3}$$

$$45. \frac{3}{2x} - \frac{3x-1}{x^2+x}$$

$$46. \frac{1}{x^2+2x+1} - \frac{1}{x^2-1} - \frac{1}{x^2-2x+1}$$

$$47. \frac{1}{x-1} + \frac{1}{x+1} - \frac{2}{x^2-1}$$

$$48. \frac{4}{(x-1)(x+3)} - \frac{3}{(x-1)(x+2)}$$

$$49. \frac{x^3-x^2}{(x+3)(x+2)} \cdot \frac{x^2+x}{x^2-4}$$

$$50. \frac{x^2-4}{x^2-9} \cdot \frac{x^2-4x+4}{x^2+6x+9}$$

$$51. \frac{x}{x-1} + \frac{1}{x} - \frac{x^2}{x^2-x}$$

$$52. \left(2x - \frac{2}{x}\right) \cdot \left(1 + \frac{1}{x-1}\right)$$

$$53. \left(\frac{1}{x+2} + \frac{x}{x-2}\right) \cdot \left(\frac{x}{x+2} - \frac{1}{x-2}\right)$$

$$54. \frac{a}{b} \cdot \left(\frac{1}{a} - \frac{1}{b}\right)$$

$$55. \frac{2}{x} \cdot \left(\frac{1}{x} \cdot \frac{1}{x-1}\right)$$

$$56. \left(\frac{1}{x-1} - \frac{1}{x+2}\right) \cdot \frac{2}{x^2-2x+1}$$

$$57. \left(\frac{10}{x+3} - \frac{8}{x+2}\right) \cdot \left(\frac{x+2}{x} - \frac{8}{x+2}\right)$$

$$58. \frac{1}{a^2-b^2} \cdot \frac{1}{a+b}$$

$$59. \frac{3x^2-3x}{y} \cdot \frac{yx-y}{y^2}$$

$$60. \left(1 + \frac{x-y}{x+y}\right) \cdot \left(1 - \frac{x-y}{x+y}\right)$$

$$61. \frac{x}{x-2} + \frac{2x^2-3x+18}{x^3-4x} - \frac{4x}{x^2+2x}$$

$$62. \frac{x + \frac{1}{x}}{x - \frac{1}{x}}$$

$$63. \frac{x^2+2xy+y^2}{x+y} \cdot \frac{x^2-y^2}{\frac{1}{x} - \frac{1}{y}}$$

$$64. \left(\frac{1}{3x-y} - \frac{1}{3x}\right) \cdot \frac{1}{\frac{3x}{y} - 1}$$

SOLUCIONES

1. $\frac{1-2a}{3+6a}$	17. $\frac{1}{x^2+1}$	33. $\frac{2x+9}{x^2-x-6}$	49. $\frac{x^3-3x^2+2x}{x^2+4x+3}$
2. $\frac{1}{xy}$	18. $\frac{2x^2}{x-3}$	34. $\frac{2x-5}{x^2-9}$	50. $\frac{x^2+5x+6}{x^2-5x+6}$
3. $\frac{b}{2a}$	19. $\frac{b}{3+2a}$	35. $\frac{a^3}{b^4}$	51. $\frac{1}{x}$
4. $\frac{2-2x}{x+x^2}$	20. $x-2$	36. $\frac{x^2+2x+1}{x^4-x^3}$	52. $2x+2$
5. $\frac{1}{x^2y}$	21. $\frac{z-3}{2z+6}$	37. $\frac{a^3c}{b}$	53. $\frac{x^2+3x-2}{x^2-3x-2}$
6. $\frac{3}{2}$	22. $\frac{b}{a+x}$	38. $\frac{x^2+1}{x^2-2x+1}$	54. $\frac{b-a}{b^2}$
7. $\frac{3x+6}{5x-5}$	23. $\frac{1}{1-ab}$	39. 1	55. $\frac{2x-2}{x^2}$
8. $\frac{2x^2}{a}$	24. $\frac{a-b}{3}$	40. $\frac{xy+x}{xy+y}$	56. $\frac{3x-3}{2x+4}$
9. $\frac{5x^3-5x^2+10}{x^2-3x+1}$	25. $\frac{6-b}{2a}$	41. $\frac{cd}{ab}$	57. $\frac{2x}{x^2+x-6}$
10. $\frac{ba-b}{a^3b-a^3}$	26. $\frac{2x+1}{4x-2}$	42. $\frac{ac}{bd}$	58. $\frac{1}{a-b}$
11. $\frac{1}{2ab}$	27. $\frac{1-x^3y^3}{x^5y^5}$	43. $\frac{x+1}{x^2+4x+4}$	59. $3x$
12. $\frac{x}{x+1}$	28. $\frac{3a}{2b}$	44. $\frac{-6}{x^2-9}$	60. $\frac{x}{y}$
13. $\frac{x+1}{x-1}$	29. $\frac{1+a-b}{ab}$	45. $\frac{-3x+5}{2x^2+2x}$	61. $\frac{x^3+5x+18}{x^3-4x}$
14. $\frac{x-1}{x+1}$	30. $\frac{xy+y+x^2}{x^2y^2}$	46. $\frac{-x^2-4x+1}{x^4-2x^2+1}$	62. $\frac{x^2+1}{x^2-1}$
15. $\frac{3}{x+3}$	31. $\frac{-1}{x^2-x}$	47. $\frac{2}{x+1}$	63. $\frac{-1}{xy}$
16. $\frac{5}{3x^2+6x}$	32. $\frac{-4}{x^2-4}$	48. $\frac{1}{x^2+5x+6}$	64. $\frac{1}{3x}$