# FRACCIONES ALGEBRAICAS

**Simplificar:**

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

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

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

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

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

**6.** $\dfrac{15x+15}{10x+10}$

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

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

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

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

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

**12.** $\dfrac{x^2+x}{x^2+2x+1}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**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.** $\frac{x-2}{x+2}:\frac{x^2-4}{x^2+4x+4}$

**40.** $\frac{x}{y}:\frac{x+1}{y+1}$

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

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

**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.** $\frac{x^3-x^2}{(x+3)(x+2)}:\frac{x^2+x}{x^2-4}$

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

**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.** $\left(\frac{1}{x+2}+\frac{x}{x-2}\right):\left(\frac{x}{x+2}-\frac{1}{x-2}\right)$

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

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

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

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

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

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

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

**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.** $\frac{x^2+2xy+y^2}{x+y}:\frac{x^2-y^2}{\frac{1}{x}-\frac{1}{y}}$

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