

Rational Expressions Concept ReviewKey
No work

Perform the indicated operations. Don't forget to list restrictions.

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

$$\frac{1}{2x^2}, x \neq 0$$

2. $\frac{x^2-15x+54}{x^2-8x-9} \cdot \frac{x^2+7x+6}{x^2-36}$

$$1, x \neq 9, -1, -6, 6$$

3. $\frac{9x^2-16}{6x+8} \div \frac{15x-20}{30x-45}$

$$\frac{3(2x-3)}{2}$$

$$x \neq -\frac{4}{3}, \frac{4}{3}, \frac{3}{2}$$

4. $\frac{x^2+4x-140}{x^2-13x+30}$

$$\frac{(x+14)}{(x-3)}$$

$$x \neq 3, 10$$

5. $\frac{5}{y+3} + \frac{3y+4}{y^2+7y+12}$

$$\frac{8}{(y+4)}$$

$$y \neq -3, -4$$

6. $\frac{16x^2-40x}{4x^3} \cdot \frac{3x-3}{x^2-5x+4}$

$$\frac{6(2x-5)}{x^2(x-4)}$$

$$x \neq 0, 1, 4$$

7. $\frac{16x-32}{12x+18} \cdot \frac{4x^2-9}{6x^2+x-15}$

$$\frac{8(x-2)}{3(3x+5)}$$

$$x \neq -\frac{3}{2}, \frac{3}{2}, -\frac{5}{3}$$

8. $\frac{12x-36}{x^2+9x-36}$

$$\frac{12}{(x+12)}$$

$$x \neq -12, 3$$

9. $\frac{5x+20}{x^2-16} - \frac{2}{x-4}$

$$\frac{3}{(x-4)}$$

$$x \neq -4, 4$$

$$10. \frac{3x+5}{x^2+8x-20} + \frac{x-13}{x^2+8x-20}$$

$$\frac{4}{x+10}$$

$$x \neq 2, -10$$

$$11. \frac{14x^2y^4}{42x^6y}$$

$$\frac{y^3}{3x^4}$$

$$x \neq 0$$

$$y \neq 0$$

$$12. \frac{x^2-1}{x^2-64} \div \frac{x^2+3x-4}{2x^2-8x-64}$$

$$\frac{2(x+1)}{(x+8)}$$

$$x \neq -8, 8, -4, 1$$

$$13. \frac{3}{4x+8} + \frac{3}{x^2-4}$$

$$\frac{3}{4(x-2)}$$

$$x \neq -2, 2$$

$$14. \frac{9}{3x} - \frac{1}{4}$$

$$\frac{(12-x)}{4x}$$

$$x \neq 0$$

$$15. \frac{x^2-9x}{x^2-7x-18} \cdot \frac{x^2-9x-22}{3x^3+6x^2}$$

$$\frac{(x-11)}{3x(x+2)}$$

$$x \neq 9, -2, 0$$

$$16. \frac{17x+31}{4x+5} - \frac{6-3x}{4x+5}$$

$$5$$

$$x \neq -\frac{5}{4}$$

$$17. \frac{x^2-5x-14}{x^2-13x+42} \div \frac{x^2-8x-20}{x^2-11x+30}$$

$$\frac{(x-5)}{(x-10)}$$

$$x \neq 7, 6, 10, -2, 5$$

$$18. \frac{1}{y+3} + \frac{2}{y^2+4y+3}$$

$$\frac{1}{y+1}$$

$$y \neq -3, -1$$

$$19. \frac{8x^2+10x-3}{4x^2-9}$$

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

$$x \neq -\frac{3}{2}, \frac{3}{2}$$

$$20. \frac{6+5x}{x^2-x-12} - \frac{2+6x}{x^2-x-12}$$

$$-\frac{1}{(x+3)}$$

$$x \neq 4, -3$$

$$21. \frac{5}{x+10} - \frac{4x}{x^2+12x+20}$$

$$\frac{1}{x+2}$$

$$x \neq -10, -2$$

$$2. \frac{6x+30}{x^2-4x-45} \cdot \frac{x^2-81}{2x-22}$$

$$\frac{3(x+9)}{x-11}$$

$$x \neq 9, -5, 11$$

$$23. \frac{x}{4x+4} + \frac{1}{4x+4}$$

$$\frac{1}{4}$$

$$x \neq -1$$

$$24. \frac{6}{6x+8} + \frac{9x}{12x+16}$$

$$\frac{3}{4}$$

$$x \neq -\frac{4}{3}$$

$$25. \frac{5x^2-15x}{10x^2} \div \frac{x^2-11x+24}{7x-56}$$

$$\frac{7}{2x}$$

$$x \neq 0, 3, 8$$

$$26. \frac{7+3x}{x^2-100} - \frac{2x-3}{x^2-100}$$

$$\frac{1}{x-10}$$

$$x \neq -10, 10$$

$$27. \frac{5}{4x} + \frac{7}{12x}$$

$$\frac{11}{6x}$$

$$x \neq 0$$

$$28. \frac{x^2-49}{x^2+19x+84}$$

$$\frac{(x-7)}{(x+12)}$$

$$x \neq -7, -12$$

$$29. \frac{3x}{x-6} + \frac{6x}{4x-24}$$

$$\frac{9x}{2(x-6)}$$

$$x \neq 6$$

$$30. \frac{4}{x^2+4x+3} - \frac{2}{x^2+3x+2}$$

$$\frac{2}{(x+3)(x+2)}$$

$$x \neq -1, -3, -2$$