MULTIPLYING AND DIVIDING RATIONAL EXPRESSIONS

Multiply or divide as indicated. Simplify each answer.

1. $\frac{xy^2}{30} \cdot \frac{12}{x^2y}$

2. $\frac{-5abc}{9c^2} \cdot \frac{3ab^2c}{-2b}$

3. $\frac{-6rst^3}{-5rt^2} \cdot \frac{15t^3}{-3s^2}$

4. $\frac{xy^2}{-13z^3} \cdot \frac{-39x^2z}{4xyz}$

5. $\frac{8x^2}{4x+16} \cdot \frac{x+2}{2xy}$

6. $\frac{a^2-b^2}{2c^2-4c} \cdot \frac{2c-4}{a+b}$

7. $\frac{t^2s^2}{3t^2-8t+5} \cdot \frac{3t-5}{rts}$

8. $\frac{1-x}{3x+5} \cdot \frac{12x^2+20x}{x^2-1}$

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

10. $\frac{2a^2-5ab-3b^2}{b-1} \cdot \frac{b^2-b}{a-3b}$

11. $\frac{2x^2-10xy-12y^2}{x+y} \cdot \frac{x^2-9}{2x+6}$

12. $\frac{a^3+4a^2+4a}{3x^2-5xy+2y^2} \cdot \frac{x-y}{3a^2+6a}$

13. $\frac{c^2d}{8} \div \frac{d^2c}{12}$

14. $\frac{-3xy}{z^3} \div \frac{xy^2}{-2z^2}$

15. $\frac{3np}{x^2y^2} \div \frac{18np}{xy^3}$

16. $\frac{-3x^2}{8a^2} \div \frac{8a^2}{-3x^2}$

17. $\frac{x-3}{x+4} \div \frac{2x^2-4x-6}{2x}$

18. $\frac{3x^3-2x^2-5x}{x+7} \div \frac{x^2-1}{x^2+6x-7}$

19. $\frac{x^2+4x+4}{x^2-4x+4} \div \frac{x^2-4}{2x^2-6x+4}$

20. $\frac{6x+24}{10x} \div \frac{2x^2-32}{30x^2}$

21. $\frac{2x^2+7x+6}{x^2-3x-10} \div \frac{x+1}{5-x}$

22. $\frac{2n^2+n-15}{n^2-2n+1} \div \frac{4n^2-6n-10}{n-1}$

23. $\frac{t^3-1}{t^2+1} \div \frac{t^2+t+1}{t-1}$

24. $\frac{6x^2-31x+40}{x+4} \div \frac{2x^2-7x+5}{x^2+3x-4}$

SIMPLIFYING RATIONAL EXPRESSIONS: MIXED TYPES

Carry out the operations indicated. Write each answer in its simplest form.

1. $\frac{3x}{8} + \frac{7x}{4} - \frac{4x}{6}$

2. $\frac{2n+9}{2} - \frac{3n-1}{6} + \frac{n-3}{4}$

3. $2 - \frac{3b}{a} + \frac{5ab}{c}$

4. $t - 3 + \frac{8}{t+1}$

5. $\frac{2y-3}{y-1} - \frac{3y-2}{y}$

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

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

8. $3k + \frac{5k}{k-2}$

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

10. $\frac{6}{2n-6} - \frac{2n+3}{3-n}$

11. $\frac{a-3}{a+2} - \frac{3a+6}{2a-4}$

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

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

14. $\frac{d}{d^2-9} - \frac{8}{2d-6}$

15. $\frac{1}{a+3} + \frac{a+2}{a^2-9} + \frac{6}{a-3}$

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

17. $\dfrac{\frac{2}{3} + \frac{3}{4}}{\frac{5}{6} - \frac{1}{2}}$

18. $\dfrac{5 + \frac{1}{3}}{3 - \frac{1}{6}}$

19. $\dfrac{\frac{5}{x} - \frac{3}{2x}}{8 - \frac{3}{x}}$

20. $\dfrac{a + 2b - \frac{2}{ab}}{\frac{3}{a} + \frac{2}{b}}$

21. $\dfrac{1 - n + m}{3 - \frac{m+1}{m-n}}$

22. $\dfrac{\frac{a}{b} - \frac{b}{a}}{\frac{a}{b} + \frac{2b}{a}}$

23. $\dfrac{\frac{x}{y} - 3 + \frac{y}{x} + 1}{x + y}$

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