

TOÁN 8

PHÂN THỨC ĐẠI SỐ

Bài 1. Tìm điều kiện có nghĩa của các phân thức sau

1. $x^2 + 2x + 3$

2. $x^2 + xy + y^2$

3. $\frac{7}{x}$

4. $\frac{1}{x-5}$

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

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

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

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

9. $\frac{5x+y}{x^2+6x+10}$

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

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

12. $\frac{9-4x^2}{36y^2-25}$

Bài 2. Rút gọn

1. $\frac{6xy}{4}$

2. $\frac{2x^2y}{x}$

3. $\frac{3x^3y^5}{2xy^6}$

4. $\frac{-14x^3y^2z}{22x^5yz^3}$

5. $\frac{15a^5b^6c}{8a^2bc^4}$

6. $\frac{3a(a-b)^5}{2a^2(a-b)^3}$

7. $\frac{7(x-2)^3(x+3)^5}{14(x-2)^5(x+3)^3}$

8. $\frac{3x^2y+4xy^2}{6ax+8ay}$

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

10. $\frac{2x+2y}{2}$

11. $\frac{5x-5y}{3x-3y}$

12. $\frac{x^2-xy}{3xy-3y^2}$

13. $\frac{-15x(x-y)}{3(y-x)}$

14. $\frac{5(x-y)-3(y-x)}{10(x-y)}$

15. $\frac{x-y}{y-x}$

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

17. $\frac{2x+2y+5x+5y}{2x+2y-5x-5y}$

18. $\frac{2ax^2-4ax+2a}{5b-5bx^2}$

19. $\frac{x^2+4x+3}{2x+6}$

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

21. $\frac{(x+y)^2-z^2}{x+y+z}$

22. $\frac{x^6+2x^3y^3+y^6}{x^7-xy^6}$

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

24. $\frac{x^3-x^2y+xy^2}{x^3+y^3}$

25. $\frac{(x^3-27)(2x^2-4x^3)}{(3x-x^2)(x^3+3x^2+9x)}$

Bài 3. Qui đồng các phân thức sau

1. $\frac{x}{16}; \frac{xy}{20}$

2. $\frac{xy}{8}; \frac{y}{15}$

3. $\frac{1}{4x}; \frac{3}{6y}$

4. $\frac{x}{2y}; \frac{y}{2x}$

5. $\frac{xy}{8}; \frac{yz}{12}; \frac{xz}{24}$

6. $\frac{xy}{2x}; \frac{yz}{3x}; \frac{xz}{4y}$

7. $\frac{5d}{16a^2b^2c}; \frac{a^2}{24b^2c^4d}; \frac{-bc}{12a^4d^2}$

8. $\frac{2}{15x^3y^2}; \frac{a}{10x^4z^3}; \frac{-b}{20y^3z}$

9. $\frac{3}{2m+6}; \frac{m-2}{m^2+6m+9}$

10. $\frac{3}{a^3-1}; \frac{2a}{a^2+a+1}; \frac{a}{a-1}$

11. $\frac{2a^2-11ab}{2ab}; \frac{a+2b}{a}; \frac{a-5b}{b}$

12. $\frac{x-12a}{x^2-16a^2}; \frac{4a}{4ax-x^2}$

13. $\frac{3a^2-a+5}{a^3-1}; \frac{a}{a^2+a+1}; -2$

14. $\frac{-7b}{12ac^2}; \frac{11c}{18a^2b}; \frac{-3x}{4bx^2}$

15. $\frac{5x}{4ab^2}; \frac{-7}{6a^2b}; \frac{-3x}{4bx^2}$

16. $\frac{b-a}{a^2}; \frac{a+b}{b^2}; \frac{a+b}{ab}$

17. $a^2+1; \frac{a^4+1}{a^2-1}$

18. $\frac{b}{a^2-2ab+b^2}; \frac{a+b}{b^2-ab}$

19. $\frac{xy}{x^2-y^2}; \frac{y}{xy-x^2}; \frac{xy}{y^2-xy}$

Bài 4. Cộng trừ các phân thức

1. $\frac{x-y}{8} + \frac{2y}{8}$

2. $\frac{m+2n}{mn} + \frac{m-2n}{mn}$

3. $\frac{a-5}{5} + \frac{1-a}{5}$

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

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

6. $\frac{x+1}{a-b} + \frac{x-1}{a-b} + \frac{x+3}{a-b}$

7. $\frac{3}{4xy} + \frac{5x}{2y^2z} + \frac{7}{6yz^2}$

8. $\frac{5x}{ab} + \frac{2y}{3a^2z} + \frac{3}{2a^2b^2}$

9. $\frac{5x^2-2x-1}{x^2y} + \frac{2-3x}{xy}$

10. $\frac{4a-c}{4a} + \frac{2bc-3a^2}{6ac} + \frac{5a-b}{2b}$

11. $\frac{1}{a^2-1} + \frac{1}{2a+2} + \frac{1}{2a-2}$

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

13. $\frac{4a^2-3a+17}{a^3-1} + \frac{2a-1}{a^2+a+1} + \frac{6}{1-a}$

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

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

16. $\frac{2x^2-xy}{x-y} + \frac{xy+y^2}{y-x} + \frac{2y^2-x^2}{x-y}$

17. $\frac{3x}{10} + \frac{2x-1}{15} + \frac{2-x}{20}$

18. $x + \frac{1-2x}{9} + \frac{3x-2}{12}$

19. $a+b + \frac{3ac}{2}$

20. $\frac{bc-a^2}{ab} + \frac{ac-b^2}{bc} + \frac{ab-c^2}{ca}$

21. $\frac{21x^2-11xy}{2xy} + \frac{5y-x}{y} + \frac{x+2y}{x}$

22. $a+b + \frac{a^2+b^2}{a+b}$

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

Bài 5. Cộng trừ các phân thức

1. $\frac{7}{a^2-9} + \frac{5}{a-3} + \frac{1}{a+3}$

2. $\frac{4}{b+2} + \frac{3}{2-b} + \frac{12}{b^2-4}$

$$3. \frac{2x+y}{2x^2-xy} + \frac{16x}{y^2-4x^2} + \frac{2x-y}{2x^2+xy}$$

$$4. \frac{1}{a-b} + \frac{3ab}{b^3-a^3} + \frac{a-b}{a^2+ab+b^2}$$

$$5. \frac{3pq+2q}{2m} - \frac{2pq+q}{2m}$$

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

$$7. \frac{xy}{2x-y} - \frac{x^2}{y-2x}$$

$$8. \frac{5a^2-b^2}{ab} - \frac{3a-2b}{b}$$

$$9. \frac{2b^2+3ax}{bx} - \frac{ab+5bx}{ax}$$

$$10. \frac{3x}{5x+5y} - \frac{x}{10x-10y}$$

$$11. \frac{b}{ab-5a^2} - \frac{15b-25a}{b^2-25a^2}$$

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

$$13. \frac{a+9b}{a^2-9b^2} - \frac{3b}{a^2+3ab}$$

$$14. \frac{2}{a-1} - \frac{4a+2}{a^3-1}$$

$$15. \frac{1}{3a-2} - \frac{4}{3a-2} - \frac{3a-6}{4-9a^2}$$

$$16. \frac{1}{x-3} - \frac{3}{2x+6} - \frac{x}{2x^2-12x+18}$$

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

$$18. \frac{5}{a+1} - \frac{10}{a-(a^2+1)} - \frac{15b}{b(a^3+1)}$$

$$19. \frac{5}{2a-3} + \frac{2}{2a+3} - \frac{2a-33}{9-4a^2}$$

$$20. \frac{2x(x-2)}{x^2-25} - \frac{x-3}{x+5} + \frac{x-2}{5-x}$$

$$21. 2y - \frac{6xy+2y}{3x+2y} + \frac{2y-9x^2}{3x+2y}$$

$$22. \frac{2}{x^2+2x} + \frac{3}{x^2+7x+10} + \frac{4}{x^2+14x+15} + \frac{1}{x+9}$$

$$23. \frac{1}{a^2-5a+6} + \frac{1}{a^2-7a+12} + \frac{1}{a^2-9a+20} + \frac{1}{a^2-11a+30}$$