

Simplify Rational Expressions

①

$$\textcircled{1} \quad \frac{5x}{5}$$

$$\textcircled{2} \quad \frac{10xy}{2x}$$

$$\textcircled{3} \quad \frac{18xy}{24y}$$

$$\textcircled{4} \quad \frac{25x^2y}{15xy^2}$$

$$\textcircled{5} \quad \frac{x^2}{x^2y^2}$$

$$\textcircled{6} \quad \frac{3xy}{12x^2}$$

$$\textcircled{7} \quad \frac{2(x+y)}{5(x+y)}$$

$$\textcircled{8} \quad \frac{8(a+b)}{2(a+b)}$$

$$\textcircled{9} \quad \frac{16(a+b)(a-b)}{(a-b)8(a+b)}$$

$$\textcircled{10} \quad \frac{x-y}{(x-y)^2}$$

$$\textcircled{11} \quad \frac{4(a+b)^2}{2(a+b)}$$

$$\textcircled{12} \quad \frac{2xy(x-y)(a+b)^3}{4x^2y(x-y)^2(a+b)}$$

$$\textcircled{13} \quad \frac{5a+10}{10a-15} =$$

$$\textcircled{19} \quad \frac{x^2-y^2}{x^2+2xy+y^2}$$

$$\textcircled{14} \quad \frac{x^2+xy}{x^2-xy} =$$

$$\textcircled{20} \quad \frac{x^2-9}{x^2+x-6}$$

$$\textcircled{15} \quad \frac{n^2+5n+6}{n^2-2n-8}$$

$$\textcircled{21} \quad \frac{2n^2-13n+15}{2n^2+n-6}$$

$$\textcircled{16} \quad \frac{x^2-11x+30}{x^2-9x+18}$$

$$\textcircled{22} \quad \frac{3x^2+2x-1}{x^2+3x+2}$$

$$\textcircled{17} \quad \frac{3y^2+17y+10}{3y^2-y-2}$$

$$\textcircled{23} \quad \frac{x^3+8}{x^2-4}$$

$$\textcircled{18} \quad \frac{x^2-16}{x^2-x-12}$$

$$\textcircled{24} \quad \frac{4xy(x^2-4)(x^2-x-6)}{2xy(x^2-9)(x^2+4x+4)}$$

Multiplying Rational Expressions

(2)

$$\textcircled{1} \quad \frac{4xy}{z} \cdot \frac{z}{2x} =$$

$$\textcircled{2} \quad \frac{x^2}{2} \cdot \frac{2y}{x} =$$

$$\textcircled{3} \quad \frac{x^2y}{z^2} \cdot \frac{z}{xy} =$$

$$\textcircled{4} \quad \frac{x^2}{y} \cdot \frac{1}{x^2y} =$$

$$\textcircled{5} \quad \frac{x+1}{x^2} \cdot \frac{x^3}{x+1} =$$

$$\textcircled{6} \quad \frac{xy^2}{3} \cdot \frac{6x}{x^2y} =$$

$$\textcircled{7} \quad \frac{2(a+b)}{6(a-b)} \cdot \frac{3(a-b)}{(a+b)} =$$

$$\textcircled{8} \quad \frac{(a+b)(a-b)}{x-y} \cdot \frac{(x+y)(x-y)}{(a+b)} =$$

$$\textcircled{9} \quad \frac{x^2 - 2x + 1}{x+1} \cdot \frac{x+2}{x^2 - 1} =$$

$$\textcircled{10} \quad \frac{x^2 + 5x}{x^2 - 25} \cdot \frac{x^2 + x - 6}{x^2 - 4} =$$

$$\textcircled{11} \quad \frac{n^2 + 5n - 14}{n^2 + 2n - 15} \cdot \frac{n^2 + 4n - 5}{n^2 + 4n - 12} =$$

$$\textcircled{12} \quad \frac{x^2 - 64}{x^2 - x - 12} \cdot \frac{x^2 + x - 6}{x^2 + 7ex - 16} =$$

$$\textcircled{13} \quad \frac{y^2 - 3y - 10}{y^2 - 2y - 15} \cdot \frac{y^2 - y - 12}{y^2 - 9} =$$

$$\textcircled{14} \quad \frac{4xy(x^2 - 9)}{2x^2y^2(x^2 + 6x + 9)} \cdot \frac{6xy(3x + 9)}{8x^2y(x - 3)} =$$

Dividing Rational Expressions

(3)

$$\textcircled{1} \quad \frac{n}{5} \div \frac{n}{15} =$$

$$\textcircled{2} \quad \frac{y^2}{4} \div \frac{y}{8} =$$

$$\textcircled{3} \quad \frac{3x^2y}{5x} \div \frac{9xy^2}{10} =$$

$$\textcircled{4} \quad \frac{8m^2n^2}{6mn} \div \frac{12mn^2}{9n} =$$

$$\textcircled{5} \quad \frac{12xy}{12xy^2} \div \frac{15y^2}{18x^3} =$$

$$\textcircled{6} \quad \frac{10m^2n^3}{3mn} \div \frac{15m^2n^2}{9mn} =$$

$$\textcircled{7} \quad \frac{2x+4}{x^2-9} \div \frac{4x+8}{2x-6} =$$

$$\textcircled{8} \quad \frac{3x-3}{x^2-1} \div \frac{9x+9}{x^2+x-2} =$$

$$\textcircled{9} \quad \frac{12x+36}{x^2-2x-8} \div \frac{15x+45}{x^2+x-20} =$$

$$\textcircled{10} \quad \frac{n^2+n-12}{n^2-4n-21} \div \frac{n^2-8n+15}{n^2-2n-35} =$$

$$\textcircled{11} \quad \frac{y^2+7y-18}{y^2-16} \div \frac{y^2+11y+18}{y^2+2y-8} =$$

$$\textcircled{12} \quad \frac{x^2+16x+64}{x^2-9} \div \frac{x^2-64}{x+3} =$$

$$\textcircled{13} \quad \frac{x^2-x-6}{2x^2-50} \div \frac{x^2-x-6}{4x^2-100} =$$

Adding Rational Polynomials ④

$$\textcircled{1} \quad \frac{3}{x+3} + \frac{x-5}{x+3} =$$

$$\textcircled{2} \quad \frac{2x-3}{x+2} + \frac{2x-1}{x+2} =$$

$$\textcircled{3} \quad \frac{8n-1}{5} - \frac{3n-6}{5} =$$

$$\textcircled{4} \quad \frac{2x-3}{x+2} + \frac{2x-1}{x+2} =$$

$$\textcircled{5} \quad \frac{x+4}{x-7} + \frac{2x-5}{x-7} =$$

$$\textcircled{6} \quad \frac{x+4}{6} + \frac{3x+2}{6} =$$

$$\textcircled{7} \quad \frac{4n-1}{n+5} - \frac{2n-4}{n+5} =$$

$$\textcircled{8} \quad \frac{5x+7}{x-9} - \frac{3x+4}{x-9} =$$

$$\textcircled{9} \quad \frac{x}{3} + \frac{x^2}{5} =$$

$$\textcircled{10} \quad \frac{5x}{3} + \frac{4x}{2} =$$

$$\textcircled{11} \quad \frac{y-1}{4} + \frac{y+1}{5} =$$

$$\textcircled{12} \quad \frac{2x+3}{4} - \frac{3x-4}{7} =$$

$$\textcircled{13} \quad \frac{x-y}{x} + \frac{x+y}{y} =$$

$$\textcircled{14} \quad \frac{x+2}{3x} + \frac{x-3}{2x} =$$

$$\textcircled{15} \quad \frac{(x+3)}{5x} - \frac{(x+1)}{6x} =$$

$$\textcircled{16} \quad \frac{x-2}{12x} + \frac{2x+2}{18x} =$$

$$\textcircled{17} \quad \frac{2}{x^2y} + \frac{3}{xy^2} =$$

$$\textcircled{18} \quad \frac{x+2}{2x} + \frac{x-1}{3x} + \frac{2x+1}{5x} =$$

$$\textcircled{19} \quad \frac{3}{2nm^2} + \frac{2}{3n^2m} + \frac{1}{6m^2n^2} =$$

$$\textcircled{20} \quad \frac{y}{6x^2} + \frac{4}{9xy} - \frac{x}{12y} =$$

Solving Rational Equations

(5)

$$\textcircled{1} \quad \frac{n}{6} - \frac{2n}{3} = 9$$

$$\textcircled{11} \quad \frac{y}{y+1} = 5$$

$$\textcircled{2} \quad \frac{2x}{5} + \frac{1}{2} = \frac{3x}{10}$$

$$\textcircled{3} \quad \frac{3}{5} + \frac{2x}{3} = \frac{2}{5}$$

$$\textcircled{12} \quad \frac{x}{x-2} = \frac{4}{5}$$

$$\textcircled{4} \quad \frac{3n}{4} + \frac{2n}{5} = \frac{4}{3}$$

$$\textcircled{13} \quad \frac{3}{4} = \frac{x-2}{x+3}$$

$$\textcircled{5} \quad \frac{5x}{3} - \frac{1}{2} = \frac{1x}{6} + \frac{3}{8}$$

$$\textcircled{6} \quad \frac{3}{5} + \frac{1}{4x} = \frac{3}{2x}$$

$$\textcircled{14} \quad \frac{x+2}{x-2} = \frac{4}{x-2} + \frac{x}{4}$$

$$\textcircled{7} \quad \frac{4}{2y} - \frac{2}{3y} = 1 \quad \textcircled{15} \quad \frac{1}{x-4} + \frac{1}{3x} = \frac{1}{x}$$

$$\textcircled{8} \quad \frac{n}{5} + \frac{3n}{10} = 4$$

$$\textcircled{16} \quad \frac{2}{2x+1} = \frac{3}{2x+1} + \frac{1}{2x}$$

$$\textcircled{9} \quad \frac{n-3}{n+2} = \frac{2}{7}$$

$$\textcircled{17} \quad \frac{n}{8} + \frac{1}{n-2} = \frac{n+2}{2n-4}$$

$$\textcircled{10} \quad \frac{3}{4} = \frac{x+5}{x-2}$$

$$\textcircled{18} \quad \frac{n}{5} + \frac{2}{n-2} = \frac{n+3}{5n-10}$$