

Násobení, dělení lomených výrazů, 2. část

Příklady

$$1) \frac{2xy}{x+2y} \cdot \frac{3x+6y}{6x} =$$

$$2) \frac{5x-3}{x+9} \cdot \frac{x^2+9x}{20x-12} =$$

$$3) \frac{3x+9}{6x} \cdot \frac{2x-6}{x^2-9} =$$

$$4) \frac{x^2-y^2}{x^2+xy} \cdot \frac{xy}{(x-y)^2} =$$

$$5) \frac{2x-10}{x^2-4x+4} : \frac{x-5}{x-2} =$$

$$6) \frac{4x}{x^2+10x+25} : \frac{10-2x}{x^2-25} =$$

$$7) \frac{x^2-8x}{x^2-16x+64} : \frac{3x+24}{x^2-64} =$$

$$8) \frac{x^2-6x+9}{3y-12} : \frac{x^2-9}{y-4} =$$

$$9) \frac{\frac{6x}{15y^2}}{9x} =$$
$$\frac{10x^2y}{5x^2}$$

$$10) \frac{3y}{-10x} =$$

$$11) \frac{1-x}{x^2-1} =$$
$$\frac{1+x}{(x-y)^2}$$

$$12) \frac{\frac{x^2-y^2}{x-y}}{x+y} =$$

Řešení

$$1) \frac{2xy}{x+2y} \cdot \frac{3x+6y}{6x} = \frac{2xy}{x+2y} \cdot \frac{3(x+2y)}{6x} = \frac{6xy}{6x} = y$$

$$2) \frac{5x-3}{x+9} \cdot \frac{x^2+9x}{20x-12} = \frac{5x-3}{x+9} \cdot \frac{x(x+9)}{4(5x-3)} = \frac{x}{4}$$

$$3) \frac{3x+9}{6x} \cdot \frac{2x-6}{x^2-9} = \frac{3(x+3)}{6x} \cdot \frac{2(x-3)}{(x+3)(x-3)} = \frac{6}{6x} = \frac{1}{x}$$

$$4) \frac{x^2-y^2}{x^2+xy} \cdot \frac{xy}{(x-y)^2} = \frac{(x+y)(x-y)}{x(x+y)} \cdot \frac{xy}{(x-y)(x-y)} = \frac{xy}{x(x-y)} = \frac{y}{x-y}$$

$$5) \frac{2x-10}{x^2-4x+4} : \frac{x-5}{x-2} = \frac{2(x-5)}{(x-2)(x-2)} \cdot \frac{x-2}{x-5} = \frac{2}{x-2}$$

$$6) \frac{4x}{x^2+10x+25} : \frac{10-2x}{x^2-25} = \frac{4x}{(x+5)(x+5)} \cdot \frac{(x+5)(x-5)}{2(5-x)} = \frac{2x(x-5)}{-(x+5)(-5+x)} = -\frac{2x}{x+5}$$

$$7) \frac{x^2-8x}{x^2-16x+64} : \frac{3x+24}{x^2-64} = \frac{x(x-8)}{(x-8)(x-8)} \cdot \frac{(x+8)(x-8)}{3(x+8)} = \frac{x}{3}$$

$$8) \frac{x^2-6x+9}{3y-12} : \frac{x^2-9}{y-4} = \frac{(x-3)(x-3)}{3(y-4)} \cdot \frac{y-4}{(x+3)(x-3)} = \frac{x-3}{3(x+3)}$$

$$9) \frac{\frac{6x}{15y^2}}{\frac{9x}{10x^2y}} = \frac{6x}{15y^2} : \frac{9x}{10x^2y} = \frac{6x}{15y^2} \cdot \frac{10x^2y}{9x} = \frac{2}{3y} \cdot \frac{2x^2}{3} = \frac{4x^2}{9y}$$

$$10) \frac{\frac{5x^2}{3y}}{-10x} = \frac{5x^2}{3y} : \frac{-10x}{1} = \frac{5x^2}{3y} \cdot \frac{1}{-10x} = \frac{x^2}{3y} \cdot \frac{1}{-2x} = -\frac{x}{6y}$$

$$11) \frac{\frac{1-x}{x^2-1}}{1+x} = \frac{1-x}{1} : \frac{x^2-1}{1+x} = \frac{1-x}{1} \cdot \frac{1+x}{(x+1)(x-1)} = \frac{-(-1+x)}{1} \cdot \frac{1}{x-1} = -1$$

$$12) \frac{\frac{(x-y)^2}{x-y}}{x+y} = \frac{(x-y)^2}{x^2-y^2} : \frac{x-y}{x+y} = \frac{(x-y)(x-y)}{(x+y)(x-y)} \cdot \frac{x+y}{x-y} = 1$$