

Topic 5: Simplify and operate on rational expressions

Simplify each expression.

$$1. \frac{5r-2}{2-5r} \quad 2. \frac{4x^2-9}{2x^2-x-3} \quad 3. \frac{8x^3-125y^3}{2x-5y}$$

$$4. \frac{x^2+3x-10}{5x} \cdot \frac{x^2-3x}{x^2-5x+6} \quad 5. \frac{x^2-9x+14}{x^2-5x+6} \div \frac{x-5x-14}{x+2}$$

$$6. \frac{r^2-9}{r^3-27} \div \frac{r^2+6r+9}{r^2+3r+9} \quad 7. \frac{3}{4xy^3} + \frac{1}{6x^2y}$$

$$8. \frac{2a}{a-b} - \frac{a}{b-a} \quad 9. \frac{-x^2+5x}{(x-5)^2} + \frac{x+1}{x-5}$$

$$10. 5 - \frac{x-1}{x^2+3x-10} \quad 11. \frac{x^2+2}{x^2-x-2} + \frac{1}{x+1} - \frac{x}{x-2}$$

Answers

$$1. -1 \quad 2. \frac{2x+3}{x+1} \quad 3. 4x^2+10xy+25y^2$$

$$4. \frac{x+5}{5} \quad 5. \frac{1}{x-3} \quad 6. \frac{1}{r+3}$$

$$7. \frac{9x+2y^2}{12x^2y^3} \quad 8. \frac{3a}{a-b}$$

$$9. \frac{1}{x-5} \quad 10. \frac{5x^2+14x-49}{(x+5)(x-2)} \quad 11. 0$$