

$$1. \quad -5x^2 + 20xy + 2xy - 8y^2 \\ -5x^2 + 22xy - 8y^2$$

$$2. \quad 4x^2 + 6x + 6x + 9 \\ 4x^2 + 12x + 9$$

$$3. \quad 7x^3 + 7x^2 + 49x + 5x^2 + 5x + 35 \\ 7x^3 + 12x^2 + 54x + 35$$

$$4. \quad 16\cos^2x - 4\cosx - 4\cosx + 1 \\ 16\cos^2x - 8\cosx + 1$$

$$5. \quad (x+3)(x-3)$$

$$6. \quad 2x(9x+2)$$

$$7. \quad (x^2-9)(x^2+9) \\ (x+3)(x-3)(x^2+9)$$

$$8. \quad 2(x^2-5x+6) \\ 2(x-3)(x-2)$$

$$\begin{aligned}
 9. \quad & 5x^2 + 10x - 2x - 4 \\
 & 5x(x+2) - 2(x+2) \\
 & (5x-2)(x+2)
 \end{aligned}$$

$$\begin{array}{r|rrrr}
 10. \quad -3 & 1 & 9 & 23 & 21 \\
 & & -3 & -18 & -15 \\
 \hline
 & 1 & 6 & 5 & 6
 \end{array}$$

$$x^2 + 6x + 5 + \frac{6}{x+3}$$

$$\begin{array}{r|rrrr}
 11. \quad 4 & 6 & -29 & 28 & -33 \\
 & & 24 & -20 & 32 \\
 \hline
 & 6 & -5 & 8 & -1
 \end{array}$$

$$6x^2 - 5x + 8 - \frac{1}{x-4}$$

$$12. \quad \frac{10x(1)}{10x(3x+2)} \cdot \frac{6(3x+2)}{6(x)}$$

$$\frac{1}{x}, \quad x \neq -\frac{2}{3}, \quad x \neq 0$$

$$13. \frac{(x-10)}{2(x+9)} \cdot \frac{(x+9)}{1}$$

$$\frac{x-10}{2}, x \neq -9$$

$$14. \frac{25+25}{6x} \Rightarrow \frac{50}{6x} \Rightarrow \frac{25}{3x}$$

$$15. \frac{x^2+x}{x^2(x-6)} \Rightarrow \frac{x(x+1)}{x^2(x-6)}$$

$$16. \frac{1}{(x+1)} \cdot \frac{q(x+1)}{q(x)} \Rightarrow \frac{1}{x}, x \neq 1, x \neq 0$$