

Τεστ Παραγοντοποίηση / Α' ομίλου.

$$1. 30y^3 + 25y^2 = \underset{mm}{5} \cdot \underset{o}{6} \cdot \underset{o}{y} \cdot \underset{o}{y}^2 + \underset{mm}{5} \cdot \underset{o}{5} \cdot \underset{o}{y}^2 = \underset{mm}{5} \underset{o}{y}^2 \cdot (6y + 5)$$

$$2. 12x^2 + 6x = \underset{mm}{2} \cdot \underset{o}{6} \cdot \underset{o}{x} \cdot \underset{o}{x} + \underset{mm}{6} \underset{o}{x} \cdot \underset{o}{1} = \underset{mm}{6} \underset{o}{x} \cdot (2x + 1)$$

$$3. 4a^2b + 8ab^2 - 6ab = \underset{o}{2} \cdot \underset{mm}{2} \cdot \underset{mm}{a} \cdot \underset{mm}{a} \cdot \underset{mm}{b} + \underset{o}{2} \cdot \underset{mm}{4} \cdot \underset{mm}{a} \cdot \underset{mm}{b} \cdot \underset{mm}{b} - \underset{o}{2} \cdot \underset{mm}{3} \cdot \underset{mm}{a} \cdot \underset{mm}{b} \\ = \underset{o}{2} \underset{mm}{a} \underset{mm}{b} \cdot (2a + 4b - 3)$$

$$4. 15(x-1) \cdot y + 5(x-1) \cdot w = \underset{o}{3} \cdot \underset{mm}{5} \cdot \underset{mm}{(x-1)} \cdot \underset{o}{y} + \underset{o}{5} \cdot \underset{mm}{(x-1)} \cdot \underset{mm}{w} \\ = \underset{o}{5} \cdot \underset{mm}{(x-1)} \cdot (3y + w)$$

$$5. x^2 - 25 = x^2 - 5^2 = (x-5) \cdot (x+5)$$

$$6. 7a(x-1) + 14b(1-x) = \underset{o}{7} \cdot \underset{mm}{a} \cdot \underset{mm}{(x-1)} - \underset{o}{2} \cdot \underset{mm}{7} \cdot \underset{mm}{b} \cdot \underset{mm}{(x-1)} \\ = \underset{o}{7} \cdot \underset{mm}{(x-1)} \cdot (a - 2b)$$

$$7. 36x^2 - 9 = (6x)^2 - 3^2 = (6x-3)(6x+3)$$

$$8. 4x^2 - 16y^2 = (2x)^2 - (4y)^2 = (2x-4y)(2x+4y) \\ = (\underset{o}{2} \cdot \underset{o}{x} - \underset{o}{2} \cdot \underset{o}{2} \cdot \underset{mm}{y})(\underset{o}{2} \cdot \underset{o}{x} + \underset{o}{2} \cdot \underset{o}{2} \cdot \underset{mm}{y}) = \underset{o}{2} \cdot \underset{mm}{(x-2y)} \cdot \underset{mm}{2} \cdot \underset{mm}{(x+2y)} \\ = 4 \cdot (x-2y) \cdot (x+2y)$$

$$9. 3a^2 - 12b^2 = \underset{o}{3} \cdot \underset{mm}{a}^2 - \underset{o}{3} \cdot \underset{mm}{4} \cdot \underset{mm}{b}^2 = \underset{o}{3} \cdot (a^2 - 4b^2) = 3(a^2 - (2b)^2) \\ = 3(a-2b) \cdot (a+2b)$$

$$10. y^2 - 10y + 25 = y^2 - 2 \cdot y \cdot 5 + 5^2 = (y-5)^2$$

$$11. x^2 + x \cdot y + b \cdot x + b \cdot y = \underset{o}{x} \cdot \underset{o}{x} + \underset{o}{x} \cdot \underset{o}{y} + \underset{mm}{b} \cdot \underset{mm}{x} + \underset{mm}{b} \cdot \underset{mm}{y} \\ = \underset{o}{x} \cdot (x+y) + \underset{mm}{b} \cdot (x+y) \\ = x \cdot (x+y) + b \cdot (x+y) \\ = \underline{(x+y)} \cdot \underline{(x+b)}$$

$$\begin{aligned}
 12. \quad x^2 - 2xy + y^2 - x + y &= (x^2 - 2xy + y^2) - (x - y) \\
 &= (x - y)^2 - (x - y) \\
 &= \underbrace{(x - y)} \cdot \underbrace{(x - y)} - \underbrace{(x - y)} \cdot \underbrace{1} \\
 &= \underbrace{(x - y)} \cdot [(x - y) - 1] \\
 &= (x - y)(x - y - 1)
 \end{aligned}$$

$$\begin{aligned}
 13. \quad a^2b^2 - 4b^2 - a^2 + 4 &= (a^2 \cdot \underset{\circ}{b^2} - 4\underset{\circ}{b^2}) - (a^2 - 4) \\
 &= \underset{\circ}{b^2} \cdot \underbrace{(a^2 - 4)} - \underbrace{(a^2 - 4)} \cdot \underbrace{1} \\
 &= \underbrace{(a^2 - 4)} \cdot (b^2 - 1) \\
 &= (a^2 - 2^2) \cdot (b^2 - 1^2) \\
 &= (a - 2) \cdot (a + 2) \cdot (b - 1)(b + 1)
 \end{aligned}$$

$$\begin{aligned}
 14. \quad 3y^2 + 24y + 48 &= \underset{\circ}{3} \cdot y^2 + \underset{\circ}{3} \cdot 8 \cdot y + \underset{\circ}{3} \cdot 16 \\
 &= \underset{\circ}{3} \cdot (y^2 + 8y + 16) \\
 &= 3(y^2 + 2 \cdot y \cdot 4 + 4^2) \\
 &= 3(y + 4)^2
 \end{aligned}$$

$$\begin{aligned}
 15. \quad a^2 + 2ab + b^2 - c^2 &= (a^2 + 2ab + b^2) - c^2 \\
 &= (a + b)^2 - c^2 \\
 &= [(a + b) - c] \cdot [(a + b) + c] \\
 &= (a + b - c) \cdot (a + b + c)
 \end{aligned}$$