Τεστ Παραγοντοποίηση / Β' ομάδα

1. $16y^3 + 8y^2 = 2 \cdot 8 \cdot y \cdot y^2 + 8y^2 \cdot 1 = 8y^2 \cdot (2y + 1)$

2. $10w^2 + 20w = 10 \cdot w \cdot w + 2 \cdot 10 \cdot w = 10w \cdot (w + 2)$

3. $9\alpha(\beta - \gamma) - 3(\beta - \gamma) = 3 \cdot 3 \cdot \alpha(\beta - \gamma) - 3 \cdot (\beta - \gamma) = 3(\beta - \gamma)(3\alpha - 1)$

4. $6x^3y - 9xy^2 + 3x^2y = 2 \cdot 3 \cdot x \cdot x^2 \cdot y - 3 \cdot 3 \cdot x \cdot y \cdot y + 3 \cdot x \cdot x \cdot y$

$= 3xy \cdot (2x^2 - 3y + x)$

5. $y^2 - 16 = y^2 - 4^2$

$= (y - 4) \cdot (y + 4)$

6. $x^2 + 6x + 9 = x^2 + 2 \cdot x \cdot 3 + 3^2 = (x + 3)^2$

7. $25y^2 - 9w^2 = (5y)^2 - (3w)^2 = (5y - 3w)(5y + 3w)$

8. $4\beta(y - 3) - 8\gamma(3 - y) = 4\beta \cdot (y - 3) + 2 \cdot 4 \cdot \gamma \cdot (y - 3)$

$= 4 \cdot (y - 3) \cdot (\beta + 2\gamma)$

9. $4y^2 - 8y - \beta y + 2\beta = (4y^2 - 8y) - (\beta y - 2\beta)$

$= (4 \cdot y \cdot y - 2 \cdot 4 \cdot y) - (\beta y - 2\beta)$

$= 4y(y - 2) - \beta \cdot (y - 2)$

$= 4y(y - 2) - \beta \cdot (y - 2)$

$= (y - 2) \cdot (4y - \beta)$

10. $2\alpha^2 - 32\beta^2 = 2 \cdot \alpha^2 - 2 \cdot 16 \cdot \beta^2 = 2 \cdot (\alpha^2 - 16\beta^2) = 2[\alpha^2 - (4\beta)^2]$

$= 2(\alpha - 4\beta)(\alpha + 4\beta)$

11. $4x^3 + 12x^2 + 9x = 4x \cdot x^2 + 12 \cdot x \cdot x + 9 \cdot x$

$= x \cdot (4x^2 + 12x + 9)$

$= x \left[(2x)^2 + 2 \cdot (2x) \cdot 3 + 3^2 \right]$

$= x (2x+3)^2$

12. $1 - x^2 + 2xy - y^2 = 1 - (x^2 - 2xy + y^2)$

$= 1 - (x-y)^2$

$= 1^2 - (x-y)^2$

$= [1 - (x-y)] \cdot [1 + (x-y)]$

$= (1 - x + y)(1 + x - y)$

13. $9x^4 - 49y^2 = (3x^2)^2 - (7y)^2 = (3x^2 - 7y)(3x^2 + 7y)$

14. $\alpha x^2 - \alpha y^2 + \beta x^2 - \beta y^2 = \alpha \cdot (x^2 - y^2) + \beta \cdot (x^2 - y^2)$

$= (x^2 - y^2)(\alpha + \beta)$

$= (x-y)(x+y) \cdot (\alpha + \beta)$

15. $\alpha^2 - 2\alpha\beta + \beta^2 - \alpha + \beta = (\alpha^2 - 2\alpha\beta + \beta^2) - (\alpha - \beta)$

$= (\alpha - \beta)^2 - (\alpha - \beta)$

$= (\alpha - \beta)(\alpha - \beta) - (\alpha - \beta) \cdot 1$

$= (\alpha - \beta) \cdot [(\alpha - \beta) - 1]$

$= (\alpha - \beta)(\alpha - \beta - 1)$