

Παραγοντοποίηση – Ασκήσεις (2^ο μέρος)

Άσκηση

Να παραγοντοποιήσετε τις παραστάσεις:

α. $(x - 1)^2(\alpha - 2\beta) - \alpha + 2\beta$

β. $x^3 - 2x^2 - 9x + 18$

γ. $25x^2 - y^2 - 5x + y$

δ. $x^2 - 2xy + y^2 - 1$

ε. $(\alpha - 2\beta)x^2 + 64(2\beta - \alpha)$

στ. $\alpha^2 + 9\beta^2 - 6\alpha\beta + 2(\alpha - 3\beta) + 1$

ζ. $x^2(2x - 1) + 6x(1 - 2x) + 18x - 9$

Λύση

$$\begin{aligned}
 \alpha. \quad & (x-1)^2(\alpha-2\beta) - \alpha + 2\beta = \\
 & = (x-1)^2(\alpha-2\beta) - (\alpha-2\beta) = \\
 & = (\alpha-2\beta)[(x-1)^2 - 1] = \\
 & = (\alpha-2\beta)(x-1+1)(x-1-1) = \\
 & = (\alpha-2\beta)x(x-2) = x(x-2)(\alpha-2\beta)
 \end{aligned}$$

.....

$$\begin{aligned}
 \beta. \quad & x^3 - 2x^2 - 9x + 18 = \\
 & = x^2(x-2) - 9(x-2) = \\
 & = (x-2)(x^2 - 9) = \\
 & = (x-2)(x+3)(x-3)
 \end{aligned}$$

$$\begin{aligned}
 \gamma. \quad & 25x^2 - y^2 - 5x + y = \\
 & = (5x)^2 - y^2 - (5x - y) = \\
 & = (5x + y)(5x - y) - (5x - y) = \\
 & = (5x - y)(5x + y - 1)
 \end{aligned}$$

$$\begin{aligned}
 \delta. \quad & x^2 - 2xy + y^2 - 1 = \\
 & = (x - y)^2 - 1 = \\
 & = (x - y + 1)(x - y - 1)
 \end{aligned}$$

$$\begin{aligned}
 \epsilon. \quad & (\alpha - 2\beta)x^2 + 64(2\beta - \alpha) = \\
 & = (\alpha - 2\beta)x^2 - 64(\alpha - 2\beta) = \\
 & = (\alpha - 2\beta)(x^2 - 64) = \\
 & = (\alpha - 2\beta)(x - 8)(x + 8)
 \end{aligned}$$

$$\begin{aligned}
 \sigma\tau. \quad & \alpha^2 + 9\beta^2 - 6\alpha\beta + 2(\alpha - 3\beta) + 1 = \\
 & = (\alpha - 3\beta)^2 + 2(\alpha - 3\beta) + 1 = \\
 & = [(\alpha - 3\beta) + 1]^2 = \\
 & = (\alpha - 3\beta + 1)^2
 \end{aligned}$$

.....

$$\begin{aligned}
 \zeta. \quad & x^2(2x - 1) + 6x(1 - 2x) + 18x - 9 = \\
 & = x^2(2x - 1) - 6x(2x - 1) + 9(2x - 1) = \\
 & = (2x - 1)(x^2 - 6x + 9) = \\
 & = (2x - 1)(x - 3)^2
 \end{aligned}$$

