ΕΝΟΤΗΤΑ 4

10.

(52) $x^3 - 3x(x^2 - 3x - 1) =$

$= x^3 - 3x^3 + 9x^2 + 3x =$

$= -2x^3 + 9x^2 + 3x$

11. (α) $(x^2+1)(x^3-2) - x^5 =$

$= x^5 - 2x^2 + x^3 - 2 - x^5 =$

$= x^3 - 2x^2 - 2$

(β) $(2x-1)(3x-2) + 5x =$

$= 6x^2 - 4x - 3x + 2 + 5x =$

$= 6x^2 - 2x + 2$

11

(ζ) $6x^2 - (3x-1)(2x-5) =$

$= 6x^2 - (6x^2 - 15x - 2x + 5)$

$= 6x^2 - 6x^2 + 15x + 2x - 5$

$= 17x - 5$

(δ) $3x^3 - x(3x-1)(x-2) =$

$= 3x^3 - x(3x^2 - 6x - x + 2)$

$= 3x^3 - x(3x^2 - 7x + 2)$

$= 3x^3 - 3x^3 + 7x^2 - 2x$

$= 7x^2 - 2x.$

15. $A = \dfrac{(xy^{-2})^3 \cdot (x^2y)^{-1}}{(y^{-1})^7 : (-y)}$

$A = \dfrac{x^3 y^{-6} \cdot x^{-2} y^{-1}}{y^{-7} : (-y)}$

$A = -\dfrac{x^1 y^{-7}}{y^{-7} : y^1} = -\dfrac{x^1 y^{-7}}{y^{-8}}$

$A = - x^1 y^1 = - xy$

$A = -2019\left(-\dfrac{1}{2019}\right) = 1.$

$(\alpha B)^v = a^v B^v$

16. $A = \left[(x^{-1}y)^2 : (x^7 y^3)^{-1} \right]^2$

$x = -1{,}25$

$y = 0{,}8$

$$A = \left[(x^{-2}y^2) : x^{-7}y^{-3} \right]^2$$

$$A = (x^5 y^5)^2 = x^{10} y^{10} = (xy)^{10}$$

$$A = (-1{,}25 \cdot 0{,}8)^{10} = 1 .$$

Evoluta 6

1. (α) $2x+6=2(x+3)$

(δ2) $9x-6=3(3x-2)$

(θ) $15x-5=5(3x-1)$

2. (β) $x^3-3x^2=x^2(x-3)$

(δ2) $14x^3-21x^2=7x^2(2x-3)$

3. (γ) $x^3+x=x(x^2+1)$

(δ2) $6x^4+2x^2=2x^2(3x^2+1)$

4. (β) $x(2x-1)-3(2x-1)=(2x-1)(x-3)$

(δ) $(x-2)^2+3(2-x)(x+1)=$

$=(x-2)^2-3(x-2)(x+1)=$

$=(x-2)(x-2-3(x+1))=(x-2)(-2x-5)$.

4. (ב) $x(2x-1)-2x+1=$

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

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

5. (ג) $(x-2)^2+3x-6=$

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

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

$=(x-2)(x+1)$.

(ה) $(x-3)^2-2x+6=$

$(x-3)^2-2\cdot(x-3)=$

$(x-3)\cdot(x-3+3)=$

$x\cdot(x-3)$

5. (στ) $(3x-2)^2 - 3x + 2 =$

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

$(3x-2) \cdot (3x-2-1) =$

$(3x-2)(3x-3)$

$3(3x-2)(x-1)$.

8. (γ) $x^2 - 25 = x^2 - 5^2 = (x-5)(x+5)$

(στ) $49y^2 - 16 = (7y)^2 - 4^2 =$

$= (7y-4)(7y+4)$

9. (γ) $9x^2 - \frac{25}{4} = (3x)^2 - \left(\frac{5}{2}\right)^2 = \left(3x - \frac{5}{2}\right)\left(3x + \frac{5}{2}\right)$

(ε) $(5x-1)^2 - 9 = (5x-1)^2 - 3^2 = ((5x-1)-3) \cdot ((5x-1)+3)$

$= (5x-4)(5x+2$

10. (γ) $x^4 - 16x^2 = x^2(x^2-4) = x^2(x-2)(x+2)$

(δ2) $3x^4 - 12x^2 = 3x^2(x^2 - 4)$

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

13. (β) $x^3 - 1 = x^3 - 1^3 = (x-1)(x^2+x+1)$

(δ) $(2x-1)^3 - x^3 = (2x-1-x)\left((2x-1)^2 + x(2x-1) + x^2\right)$

15. (β) $x^2 - 4x + 4 = (x-2)^2$

(δ2) $x^2 + x + \frac{1}{4} =$

$\left(x + \frac{1}{2}\right)^2$

16. (γ) $25x^2 - 10x + 1 = (5x - 1)^2$

(δ) $16x^4 - 8x^2 + 1 = (4x^2 - 1)^2$

$= [(2x-1)(2x+1)]^2 =$

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

19.

(β) $2x^2 + x - 1 = 2\left(x - \frac{1}{2}\right)(x+1)$

$= (2x-1)(x+1)$

$\alpha = 2 \quad \beta = 1 \quad \gamma = -1$

$\Delta = \beta^2 - 4\alpha\gamma$

$\Delta = 1^2 - 4 \cdot 2 \cdot (-1)$

$\Delta = 9$

$x_{1,2} = \frac{-1 \pm 3}{4}$ → $\frac{1}{2}$, -1

19.

(α) $x^2 - x - 2 = (x-2)(x+1)$

$\boxed{a=1 \quad \beta=-1 \quad \gamma=-2}$

$\Delta = \beta^2 - 4a\gamma$

$\Delta = (-1)^2 - 4 \cdot 1 (-2)$

$\Delta = 9$

$x_{1,2} = \frac{1 \pm 3}{2}$ → (2), (-1)

(β) $x^2 + x + 1 =$ Δεν παραγοντοποιείται.

$\Delta = 1 - 4 = -3$

Σχόλιο

$ax^2 + \beta x + \gamma = a(x - \rho_1)(x - \rho_2)$

6. (B) $\underline{ax - ay} - \underline{\beta x + \beta y} =$

$= a(x-y) - \beta(x-y)$

$= (x-y)(a-\beta)$

(δ) $ax - ay - x + y =$

$= a(x-y) - (x-y) =$

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

7. (B) $x^3 - x^2 + x - 1 =$

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

(δ) $xy - x - y + 1 =$

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

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

25. (α) $\frac{x^2+2x}{3x+6} = \frac{x(x+2)}{3(x+2)} = \frac{x}{3}$

(β) $\frac{3x^2-x}{6x-2} = \frac{x(3x-1)}{2(3x-1)} = \frac{x}{2}$

(γ) $\frac{x^2-1}{x^2+x} = \frac{x^2-1^2}{x(x+1)} = \frac{(x-1)(x+1)}{x(x+1)} = \frac{x-1}{x}$

(δ) $\frac{3x-x^2}{x^2-9} = \frac{x(3-x)}{x^2-3^2} = \frac{x(3-x)}{(x-3)(x+3)} = \frac{-x(x-3)}{(x-3)(x+3)}$

(ε) $\frac{x^2-25}{10x-2x^2} = \frac{x^2-5^2}{2x(5-x)} = \frac{(x-5)(x+5)}{-2x(x-5)} = \frac{x+5}{-2x}$

(στ) $\frac{1-9x^2}{6x^2-2x} = \frac{1^2-(3x)^2}{2x(3x-1)} = \frac{(1-3x)(1+3x)}{-2x(1-3x)}$

26. (α) $\dfrac{x^2-4x+4}{x^2-2x} = \dfrac{(x-2)^2}{x(x-2)} = \dfrac{x-2}{x}$

(β) $\dfrac{x^2-9}{x^2-6x+9} = \dfrac{x^2-3^2}{(x-3)^2} = \dfrac{(x-3)(x+3)}{(x-3)^2} = \dfrac{x+3}{x-3}$

(γ) $\dfrac{9x^2-6x+1}{9x^2-1} = \dfrac{(3x-1)^2}{(3x)^2-1^2} = \dfrac{(3x-1)^2}{(3x-1)(3x+1)}$

(δ) $\dfrac{x^3+1}{x^2+x} = \dfrac{x^3+1^3}{x(x+1)} = \dfrac{(x+1)(x^2-x+1)}{x(x+1)} = \dfrac{x^2-x+1}{x}$

(ε) $\dfrac{x^4-1}{x^3-1} = \dfrac{(x^2)^2-1^2}{x^3-1^3} = \dfrac{(x^2-1)(x^2+1)}{(x-1)(x^2+x+1)} = \dfrac{(x-1)(x+1)(x^2+1)}{(x-1)(x^2+x+1)}$

(ϛ) $\dfrac{x^2-2x+1}{x^3-3x^2+3x-1} = \dfrac{(x-1)^2}{(x-1)^3} = \dfrac{1}{x-1}$

Εορτασο Μαθημα

Παρασκευη 18/9/26.

Παλιο

Ενοτητα 5

(9) α γ ε

(10) α γ ε

(11) α γ ε

(12) α γ ε

(13) α γ.

Νεο

Ενοτητα 6

(1) α β δ ε ζη

(2) α β δ ε

(3) α β δ ε

(4) α γ ε

(5) α γ ε

(6) α γ

(7) α γ

(8) α β δ ε

(9) α β δ

(10) α β δ ε

(11) ολη

(13) α γ

(15) α β δ ε

(16) α β δ ε

(19) α δ ε

(20) α β.