

ΑΣΚΗΣΕΙΣ

1. $2x^2 - 3x + 1 = 0$

2. $-2x^2 + x + 6 = 0$

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

4. $3x^2 - 6x + 3 = 0$

5. $4x^2 - x + 3 = 0$

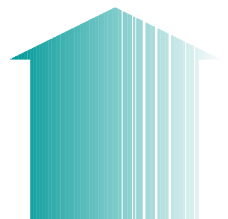
$$1. 2x^2 - 3x + 1 = 0 \quad \alpha=2 \quad \beta=-3 \quad \gamma=1$$

ΛΥΣΗ

$$\Delta = \beta^2 - 4\alpha\gamma = (-2)^2 - 4 \cdot 2 \cdot 1 = 9 - 8 = 1 > 0$$

Άρα, η εξίσωση έχει 2 λύσεις άνισες:

$$x_{1,2} = \frac{3 \pm \sqrt{1}}{2 \cdot 2} = \frac{3 \pm 1}{4} \quad x_1 = \frac{3+1}{4} = \frac{4}{4} = 1$$
$$x_2 = \frac{3-1}{4} = \frac{2}{4} = \frac{1}{2}$$



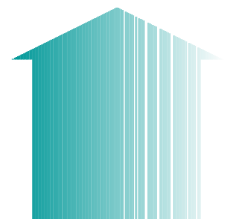
$$2. -2x^2 + x + 6 = 0 \quad \alpha = -2 \quad \beta = 1 \quad \gamma = 6$$

ΛΥΣΗ

$$\Delta = \beta^2 - 4\alpha\gamma = 1^2 - 4 \cdot (-2) \cdot 6 = 1 + 48 = 49 > 0$$

Άρα, η εξίσωση έχει 2 λύσεις άνισες:

$$x_{1,2} = \frac{-1 \pm \sqrt{49}}{2 \cdot (-2)} = \frac{-1 \pm 7}{-4} \quad x_1 = \frac{-1+7}{-4} = \frac{6}{-4} = -\frac{3}{2}$$
$$x_2 = \frac{-1-7}{-4} = \frac{-8}{-4} = 2$$



$$3. \quad 3x^2 - 2(x-1) = 2x+1$$

ΛΥΣΗ

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

$$3x^2 - 2x + 2 - 2x - 1 = 0$$

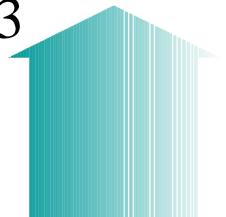
$$3x^2 - 4x + 1 = 0 \quad \alpha=2 \quad \beta=-4 \quad \gamma=1$$

$$\Delta = \beta^2 - 4\alpha\gamma = (-4)^2 - 4 \cdot 3 \cdot 1 = 16 - 12 = 4 > 0$$

$$x_{1,2} = \frac{4 \pm \sqrt{4}}{2 \cdot 3} = \frac{4 \pm 2}{6}$$

$$x_1 = \frac{4+2}{6} = \frac{6}{6} = 1$$

$$x_2 = \frac{4-2}{6} = \frac{2}{6} = \frac{1}{3}$$



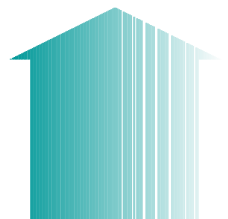
$$4. \quad 3x^2 - 6x + 3 = 0 \quad \alpha=3 \quad \beta=-6 \quad \gamma=3$$

ΛΥΣΗ

$$\Delta = \beta^2 - 4\alpha\gamma = (-6)^2 - 4 \cdot 3 \cdot 3 = 36 - 36 = 0$$

Άρα, η εξίσωση έχει μία λύση διπλή:

$$x_1 = x_2 = \frac{-\beta}{2\alpha} = \frac{-(-6)}{2 \cdot 3} = \frac{6}{6} = 1$$



$$\omega 5. 4x^2 - x + 3 = 0 \quad \alpha=4 \quad \beta=-1 \quad \gamma=3$$

ΛΥΣΗ

$$\Delta = \beta^2 - 4\alpha\gamma = (-1)^2 - 4 \cdot 4 \cdot 3 = 1 - 48 = -47 < 0$$

Άρα, η εξίσωση είναι αδύνατη

