

ΘΕΜΑΤΑ ΕΜΠΕΔΩΣΕΩΣ

4.17 Να λύσετε τις εξισώσεις:

$$\begin{array}{lll} \text{i)} \quad \frac{x+1}{3} = \frac{x+10}{6} - 3 & \text{ii)} \quad \frac{3x+1}{4} + 1 = \frac{x+1}{4} & \text{iii)} \quad \frac{x-4}{4} - \frac{x+4}{8} = -1 \\ \text{iv)} \quad \frac{5x-16}{6} - \frac{x+1}{3} = -\frac{x+8}{12} & \text{v)} \quad x+1-3(x-1) = 1-x & \end{array}$$

4.18 Να λύσετε τις εξισώσεις:

$$\begin{array}{ll} \text{i)} \quad \frac{x+2}{3} + \frac{x+3}{4} = \frac{x+4}{5} + \frac{x+5}{6} & \text{ii)} \quad \frac{x-1}{3} + \frac{x+2}{8} = \frac{x-2}{8} + \frac{7(x+1)}{24} \\ \text{iii)} \quad \frac{2-x}{4} - \frac{2+x}{2} = \frac{2x+7}{4} - \frac{2x+5}{3} & \text{iv)} \quad \frac{1-2x}{8} + \frac{3+x}{2} = \frac{2x+5}{4} + \frac{1-10x}{24} \\ \text{v)} \quad \frac{3x+2}{5} - \frac{4x-1}{10} + \frac{5x-2}{8} = \frac{x+1}{4} & \end{array}$$

4.19 Να λύσετε τις εξισώσεις:

$$\begin{array}{ll} \text{i)} \quad 3(3+2x) - (1-x) = 2(4+3x) + x & \text{ii)} \quad 2(x-3) + 1 = 3(x-1) - (2+x) \\ \text{iii)} \quad 3(x-2) + 5(x+1) = 2(2x+7) + 4(x+2) & \text{iv)} \quad \frac{x+1}{2} = x - \frac{2x+3}{4} \\ \text{v)} \quad x + \frac{2x-7}{4} = 2x + \frac{1-x}{2} & \text{vi)} \quad x + \frac{3-x}{3} - 1 = \frac{2}{3}x \end{array}$$

4.20 Να λύσετε τις εξισώσεις:

$$\begin{array}{ll} \text{i)} \quad \frac{x-1}{9} - \frac{3-x}{4} - \frac{5-x}{12} = \frac{x+1}{18} - \frac{2-x}{3} - \frac{4-x}{6} & \\ \text{ii)} \quad \frac{1}{2}(3x+19) + \frac{1}{3}\left(2 - \frac{x+5}{2}\right) = \frac{1}{6}(x+8) - \frac{x}{6} & \\ \text{iii)} \quad \frac{x+1}{6} + \frac{1}{4}\left(\frac{3x-7}{2} - x\right) = \frac{3}{2}(2x-9) - \frac{3}{4}\left(2 - \frac{x-2}{3}\right) & \\ \text{iv)} \quad \frac{2}{5}\left[x - \frac{5}{3}(x+4)\right] = \frac{x-3}{3} - \frac{2}{3}(x+2) & \end{array}$$

4.21 Να λύσετε τις εξισώσεις:

$$\begin{array}{ll} \text{i)} \quad (x+1)^2 + (x-1)^2 = 2(x^2+1) & \text{ii)} \quad (3x+2)^2 - 24x = (3x-2)^2 \\ \text{iii)} \quad (5x-3)^2 - 5x(x-1) = 5x(4x-5) & \text{iv)} \quad (3x+1)(2x-3) - (x-3)(6x+4) = 7x \\ \text{v)} \quad 2(x-2)^2 + (x+4)(x-4) + 8 = 3x(x+1) - 11x & \end{array}$$

4.22 Να λύσετε τις εξισώσεις:

- i) $3(2x+1)-(x+1)^2=2(x+3)-(x-1)^2-1$ ii) $4(x+3)(x-3)-(2x+1)^2=3$
 iii) $(x-1)(x+1)(x+2)-(x+1)^3=5-x^2$ iv) $(x^2+x-1)^2-(x^2-x-1)^2=4x^3$
 v) $(x+3)(x-1)^3=(x-2)^2(x+2)^2+2x(x-1)+1$
 vi) $x^3+8=(x+2)^3-6x(x+2)$

4.23 Να λύσετε τις εξισώσεις:

- i) $\frac{x-1}{3x-6}=\frac{x-2}{3x+1}$ ii) $\frac{7-5x}{1+x}=\frac{2-5x}{x}$
 iii) $1+\frac{x^2+x+1}{x+1}=\frac{x^2-x+1}{x-1}-1$ iv) $5\left(\frac{1}{x}-2\right)=\frac{1}{2x}+1$
 v) $\frac{x+1}{x}-2=\frac{x-1}{x}$ vi) $\frac{3}{4}-\frac{2}{x+1}=\frac{1}{2}$
 vii) $\frac{x-1}{x+1}-3=\frac{x}{x+1}-2$

4.24 Να λύσετε τις εξισώσεις:

- i) $\frac{2x}{x-3}=2-\frac{6}{x-3}$ ii) $\frac{2}{x-1}+3=1+\frac{2x}{x-1}$
 iii) $\frac{2x}{3x-6}-\frac{x}{2x-4}=1+\frac{5x-12}{12-6x}$ iv) $\frac{2x+3}{x}+\frac{1-2x}{x+1}=\frac{4}{x+1}+\frac{2x+3}{x^2+x}$
 v) $\frac{4}{x+2}+\frac{3x}{x-2}+\frac{3x^2-8}{4-x^2}=0$

4.25 Να λύσετε τις εξισώσεις:

- i) $\frac{2x+1}{x^2-x}-\frac{x}{x^2-2x+1}=\frac{1}{x}$ ii) $\frac{x+1}{x-3}-\frac{x}{3x-9}=\frac{1}{2}\left(1-\frac{1}{x-3}\right)$
 iii) $\frac{x-1}{x^2-4x+4}+\frac{1}{x}=\frac{1}{x-2}+\frac{x+1}{x^2}$ iv) $\frac{x+1}{2x-3}+\frac{x-2}{2x+3}=1-\frac{2(x-9)}{4x^2-9}$
 v) $\frac{1}{x^2-1}-\frac{3}{x^3+x^2}+\frac{3}{x^3-x^2}=\frac{x^2+6}{x^4-x^2}$

4.26 Να λύσετε τις εξισώσεις:

- i) $2-\frac{1}{\frac{x+3}{2+\frac{1}{x+3}}}=0$ ii) $2+\frac{\frac{x-1}{x+1}}{x-\frac{(x-1)^2}{x+1}}=0$ iii) $\frac{1}{1+\frac{1}{\frac{1}{x-\frac{1}{x}}}}=3$