

Problemi drugog stupnja

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$$\begin{aligned}
 2.1. \quad m^2 + (m+1)^2 &= 265 \\
 m^2 + m^2 + 2m + 1 &= 265 \\
 2m^2 + 2m - 264 &= 0 \quad | :2 \\
 m^2 + m - 132 &= 0 \\
 &\quad \begin{array}{l} / \quad \backslash \\ 12 \quad -11 \end{array} \\
 m_1 = -12 &\Rightarrow -12, -11 \\
 m_2 = 11 &\Rightarrow 11, 12
 \end{aligned}$$

$$\begin{aligned}
 2.2. \quad 2m^2 + (2m+2)^2 &= 1060 \\
 4m^2 + 4m^2 + 8m + 4 &= 1060 \\
 8m^2 + 8m - 1056 &= 0 \quad | :8 \\
 m^2 + m - 132 &= 0 \\
 &\quad \begin{array}{l} / \quad \backslash \\ 12 \quad -11 \end{array} \\
 m_1 = -12 &\Rightarrow -24, -22 \\
 m_2 = 11 &\Rightarrow 22, 24
 \end{aligned}$$

$$\begin{aligned}
 2m_1 &= -24 \\
 2m_1 + 2 &= -22 \\
 2m_2 &= 22 \\
 2m_2 + 2 &= 24
 \end{aligned}$$

$$\begin{aligned}
 2.3. \quad (2m-1)^2 + (2m+1)^2 &= 1354 \\
 4m^2 - 4m + 1 + 4m^2 + 4m + 1 &= 1354 \\
 8m^2 + 2 &= 1354 \\
 8m^2 - 1352 &= 0 \quad | :8 \\
 m^2 - 169 &= 0 \quad | \sqrt{\quad} \\
 m_{1,2} = \pm 13 &\Rightarrow 25, 27 \\
 &\quad -27, -25
 \end{aligned}$$

$$\begin{aligned}
 2m_1 - 1 &= 25 \\
 2m_1 + 1 &= 27 \\
 2m_2 - 1 &= -27 \\
 2m_2 + 1 &= -25
 \end{aligned}$$

$$\begin{aligned}
 6. \quad (10x+y) + (10y+x) &= 66 \\
 11x + 11y &= 66 \quad | :11 \\
 x + y &= 6 \\
 x &= 6 - y
 \end{aligned}$$

$$\begin{aligned}
 x^2 + y^2 &= 26 \\
 (6-y)^2 + y^2 &= 26 \\
 36 - 12y + y^2 + y^2 &= 26 \\
 2y^2 - 12y + 10 &= 0 \quad | :2 \\
 y^2 - 6y + 5 &= 0 \\
 &\quad \begin{array}{l} / \quad \backslash \\ -5 \quad -1 \end{array}
 \end{aligned}$$

$$\begin{array}{ll}
 y_1 = 5 & x_1 = 6 - y_1 \\
 & x_1 = 6 - 5 \\
 & x_1 = 1 \\
 y_2 = 1 & x_2 = 6 - y_2 \\
 & x_2 = 6 - 1 \\
 & x_2 = 5
 \end{array}$$

$$15. P_5 = P_0 = \frac{1}{2}P$$

$$\left. \begin{array}{l} P = ab \\ a = 40 \text{ cm} \\ b = 30 \text{ cm} \end{array} \right\} \begin{array}{l} P = 40 \cdot 30 \\ P = 1200 \text{ cm}^2 \end{array}$$

$$\left. \begin{array}{l} a_2 = 40 - 2x \\ b_2 = 30 - 2x \end{array} \right\} P_5 = a_2 b_2$$

$$\frac{1}{2}P = a_2 b_2$$

$$600 = (40 - 2x)(30 - 2x)$$

$$600 = 1200 - 60x - 80x + 4x^2$$

$$4x^2 - 140x + 600 = 0 \quad | :4$$

$$x^2 - 35x + 150 = 0$$

$$\begin{array}{r} -30 \quad -5 \end{array}$$

$$x_1 = 5 \text{ cm}$$

$x_2 = 30 \text{ cm} \Rightarrow$ šířka okruží ne může být
negativní

$$\Downarrow$$

$$40 - 2x$$

$$40 - 60 = -20x$$

$$30 - 2x$$

$$30 - 60 = -30x$$

$$19. x = \text{log} \text{ momčadi}$$

$$132 = \text{log} \text{ utakmica}$$

$$x(x-1) = 132$$

$$x^2 - x - 132 = 0$$

$$\begin{array}{r} -12 \quad 11 \end{array}$$

$$x_1 = 12$$

$x_2 = -11 \Rightarrow$ log momčadi ne može biti negativan

$$22. x + y = 3 \text{ (h)}$$

$$x = 3 + y$$

$$x, y = ?$$

$$\frac{3}{x} + \frac{3}{y} = 1$$

$$\frac{3}{3+y} + \frac{3}{y} = 1 \quad | \cdot y(3+y) \quad \begin{array}{l} y \neq 0 \\ y \neq -3 \end{array}$$

$$3y + 3y + 24 = y^2 + 3y$$

$$y^2 + 2y - 24 = 0$$

$$\begin{array}{r} 6 \quad -4 \end{array}$$

$y_1 = -6 \Rightarrow$ vrijeme ne može biti negativno

$$y_2 = 4$$

$$x = 3 + y_2$$

$$y = y_2$$

$$x = 3 + 4$$

$$y = 4 \text{ h}$$

$$x = 7 \text{ h}$$