$x^4 . . .$ $\quad x_1\ x_2$

$\boxed{t = x^2 \quad t \geq 0}$

$\boxed{t^2 . . .}$

dokładnie 1 dodatni t

$t > 0 \Rightarrow x_1, x_2$

$\cancel{\Delta < 0}$ $\quad \cancel{t < 0}$

$\boxed{\begin{cases} \Delta = 0 \\ t_0 > 0 \end{cases}} \vee \boxed{\begin{cases} \Delta > 0 \\ t_1 \cdot t_2 < 0 \end{cases}}$

$\boxed{\Delta = 0} \Leftrightarrow m = 1$

5.208. Dla jakich wartości parametru m ($m \in \mathbf{R}$) równanie $x^4 + 2(m-2)x^2 + m^2 - 1 = 0$ ma dwa różne rozwiązania?

$\Delta_t = 4(m-2)^2 - 4(m^2-1) = 4m^2 - 16m + 16 - 4m^2 + 4 = -16m + 20$

$\Delta_t = 0 \Leftrightarrow -16m + 20 = 0$ $\quad \boxed{m = \frac{5}{4}}$

$t = p = \frac{-b}{2a} = -(m-2) > 0$

$-m > -2$

$\boxed{m < 2}$

$\frac{5}{4}$

$\Delta_t > 0 \Leftrightarrow -16m + 20 > 0$ $\quad \boxed{m < \frac{5}{4}}$

$t_1 \cdot t_2 < 0$

$\frac{c}{a} < 0$

$m^2 - 1 < 0$

$(m-1)(m+1) < 0$

$\boxed{m \in (-1, 1)}$

odp. $m \in (-1, 1) \cup \{\frac{5}{4}\}$

$\boxed{209}$

1) 2) $\begin{cases} \Delta_t = 0 \\ t_0 > 0 \end{cases} \vee$ 3) 4) $\begin{cases} \Delta_t > 0 \\ t_1 \cdot t_2 < 0 \end{cases}$

ad 1 $\begin{cases} m \in \\ m \in \end{cases}$ ad 2 $\quad$ ad 3 $\begin{cases} m \in \\ m \in \end{cases}$ ad 4

$\Delta = . . .$

5.209. Dla jakich wartości parametru m ($m \in \mathbf{R}$) równanie $x^4 + (m+1)x^2 + m^2 + 6m + 9 = 0$ ma dwa różne rozwiązania?

$t^2 + (m+1)t + (m^2 + 6m + 9) = 0$

$(m+3)^2$

$\Delta = (m+1)^2 - 4m^2 - 24m - 36 = -3m^2 - 22m - 35$

$(m+1-2m-6)(m+1+2m+6)$

$(-m-5)(3m+7)$

$-3(m+5)(m+\frac{7}{3})$

$(m+5)(-3m-7)$

$\boxed{-3(m+5)(m+\frac{7}{3}) = \Delta}$

$\Delta = 0 \Leftrightarrow m \in \{-5, -\frac{7}{3}\}$

$t_0 > 0 \Leftrightarrow$

$-\frac{b}{2a} > 0$

$\frac{-(m+1)}{2} > 0$

$m < -1$

$m \in \{-5, -\frac{7}{3}\}$

$\Delta > 0 \Leftrightarrow$

$m \in (-5, -\frac{7}{3})$

$t_1 \cdot t_2 > 0$

$\frac{c}{a} > 0$

$(m+3)^2 > 0$

$m \neq -3$

$m \in (-5, -\frac{7}{3}) \setminus \{-3\}$

odp. $m \in \langle -5; -\frac{7}{3} \rangle \setminus \{-3\}$

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