100 $P(x) = x^3 + ax^2 + bx + c$

jaollinen $x^2 - 1$:llä , $P(2) = 12$

↓

samat nollakohdat $x = \pm 1$

$P(1) = 0$

$P(-1) = 0$

$$\begin{cases} 8 + 4a + 2b + c = 12 \\ 1 + a + b + c = 0 \\ -1 + a - b + c = 0 \end{cases} \qquad \begin{cases} 4a + 2b + c = 4 \\ a + b + c = -1 \\ a - b + c = 1 \end{cases}$$

jne ...

$P(x) = (x^2 - 1)(sx + t)$

$= sx^3 + tx^2 - sx - t$

$P(x) = x^3 + ax^2 + bx + c \longrightarrow s = 1$

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

$P(2) = 12 \longrightarrow (4 - 1)(2 + t) = 12$

$3 \cdot (2 + t) = 12$

$t = 2$

$P(x) = sx^3 + tx^2 - sx - t$

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

RAJA-ARVO

$\lim_{x \to a} f(x) = f(a)$

$$\lim_{x \to -3} \frac{x^3+4x^2+4x+3}{2x+6}$$

$$\begin{array}{r|l} x+3 & x^3+4x^2+4x+3 \\ & -(x^3+3x^2) \\ \hline & x^2+4x+3 \\ & -(x^2+3x) \\ \hline & x+3 \end{array} \qquad x^2+x+1$$

$$\lim_{x \to -3} \frac{x^3+4x^2+4x+3}{2x+6}$$

$$= \lim_{x \to -3} \frac{(x+3)(x^2+x+1)}{2(x+3)}$$

$$= \lim_{x \to -3} \frac{x^2+x+1}{2} = \frac{(-3)^2-3+1}{2} = \frac{7}{2}$$

s. 54-55

101, 109, (108)