

$$\Rightarrow ax^2 + bx + c = a(x-x_1)^2$$

3° $D < 0$: $ax^2 + bx + c \neq 0$ ei juuria

$\Rightarrow ax^2 + bx + c$ ei jäsäännä tekijöihin (polynomi on jätetty)

17.10 a) $2x^2 + 2x - 24 = 0 \quad (\Rightarrow) x = \frac{\dots}{\dots} = \begin{cases} 3 \\ -4 \end{cases}$

$$\Rightarrow 2x^2 + 2x - 24 = 2(x-3)(x-(-4)) = 2(x-3)(x+4)$$

b) $2x^2 + x - 1 = 0 \quad (\Rightarrow) x = \frac{\dots}{\dots} = \begin{cases} \frac{1}{2} \\ -1 \end{cases}$

$$\Rightarrow 2x^2 + x - 1 = 2(x - \frac{1}{2})(x - (-1)) \quad (= (2x-1)(x+1))$$

c) $x^3 - x^2 - 6x = x(x^2 - x - 6) = x \cdot 1 \cdot (x-3)(x-(-2)) = x(x-3)(x+2)$

$$x^2 - x - 6 = 0 \quad (\Rightarrow) x = \frac{\dots}{\dots} = \begin{cases} 3 \\ -2 \end{cases}$$

17.5 3. asteen polynomi : $f(x) \quad \Rightarrow f(x) = 0 \quad (\Rightarrow) x = \begin{cases} -4 \\ 0 \\ 6 \end{cases}$

$$\Rightarrow f(x) = a(x-(-4))(x-0)(x-6) \quad a = 8 \quad (x^3\text{-in kerroin})$$

$$= 8x(x+4)(x-6)$$

$$= (8x^2 + 32x)(x-6)$$

$$= 8x^3 - 48x^2 + 32x^2 - 192x$$

$$= 8x^3 - 16x^2 - 192x$$

17.8 $x^2 + bx - 96$ tekijönä : $x+12 = x-(-12) \Rightarrow x = -12$ ja 0 -solu

$$x = -12: (-12)^2 + b \cdot (-12) - 96 = 0 \quad (\Rightarrow) 144 - 12b - 96 = 0$$

$$(\Rightarrow) 48 = 12b \quad (\Rightarrow) \underline{b = 4}$$

$$x^2 + 4x - 96 = 0 \quad (\Rightarrow) x = \frac{\dots}{\dots} = \begin{cases} -12 \\ 8 \end{cases}$$

$$\Rightarrow x^2 + 4x - 96 = 1 \cdot (x-(-12))(x-8) = (x+12)(x-8)$$

$$\Rightarrow \underline{2. \text{ tekijö : } x-8}$$

TAI: $x^2 + bx - 96 = (x+12)(\quad)$

$$\Rightarrow x^2 + bx - 96 = (x+12)(x-8)$$

$$\Rightarrow \underline{2. \text{ tekijö : } x-8}$$

1. 1. asteen polynomi :

$$ax + c$$

2. $x \cdot ax = ax^2 = x^2$

$$\Rightarrow a = 1$$

3. $12 \cdot c = -96 \quad (\Rightarrow) c = -8$