

2.14 Sievennä.



a) $6t^2 - 3t^2(2t - 4)$

b) $4t^3 - t^2 + 2t(t^2 - 2t + 3)$

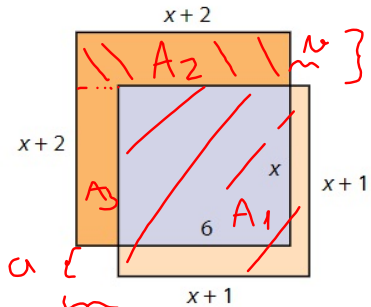
a) $6t^2 + (-3t^2) \cdot 2t + (-3t^2) \cdot (-4) = 6t^2 - 6t^3 + 12t^2 = \underline{\underline{-6t^3 + 18t^2}}$

TA) $6t^2 - (3t^2 \cdot 2t + 3t^2 \cdot (-4)) = 6t^2 - (6t^3 - 12t^2)$
 $= 6t^2 - 6t^3 + 12t^2 = \underline{\underline{-6t^3 + 18t^2}}$

b) $4t^3 - t^2 + 2t^3 - 4t^2 + 6t = \underline{\underline{6t^3 - 5t^2 + 6t}}$

2.22 Koko kuvion pinta-ala on 77.

Ratkaise muuttuja x .



$d = x + 2 - x = 2$

$A_1 + A_2 + A_3 = 77$

$(x+1)(x+1) + 2(x+2) + x(x-4) = 77$

$x^2 + x + x + 1 + 2x + 4 + x^2 - 4x = 77$

$2x^2 + 5 = 77$

$2x^2 = 72 \parallel :2$

$x^2 = 36 \parallel \sqrt{\quad}$

$x = (\pm)6$

$c = x + 2 - 6 = x - 4$

Summan neliö

$$\text{Johdanto: } (2x-3)^2 = (2x-3)(2x-3) = 4x^2 - 6x - 6x + 9 = 4x^2 - 12x + 9$$

$(2x)^2 + 2 \cdot 2x \cdot (-3) + (-3)^2$

$$\text{YLEISESTI: } (a+b)^2 = (a+b)(a+b) = a^2 + ab + ab + b^2 = a^2 + 2ab + b^2$$

$$\text{MUISTISÄÄNTÖ: } \boxed{(a+b)^2 = a^2 + 2ab + b^2}$$

$$\text{Esim. a) } (x+1)^2 = x^2 + 2 \cdot x \cdot 1 + 1^2 \\ = \underline{\underline{x^2 + 2x + 1}}$$

$$\text{b) } \underbrace{(3x-4)}_a^2 = (3x)^2 + 2 \cdot (3x) \cdot (-4) + (-4)^2 \\ = \underline{\underline{9x^2 - 24x + 16}}$$

MAOL

| | |
|----------------------------|--|
| Neliöjuuri | Muistikaavat $(a+b)^2 = a^2 + 2ab + b^2$ $(a-b)^2 = a^2 - 2ab + b^2$ $(a+b)(a-b) = a^2 - b^2$ $(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$ |
| Yleinen juuri | |
| Polynomien jako tekijöihin | |
| Toisen asteen yhtälö | |
| Korkeamman asteen yhtälö | |
| Determinantti | |

3.8

Määritä vakiolle a sellainen arvo, että polynomi on binomin neliö.



a) $x^2 + 8x + a$

b) $x^2 + ax + 25$

c) $4x^2 - 8x + a$

b) $x^2 + ax + 25$
 $a^2 + 2ab + b^2$

Handwritten annotations: A bracket above the constant term 25 indicates it is 5^2 . A bracket below the linear term ax indicates it is $2ab$.

$a = x$
 $b = 5$ } $\Rightarrow a = 2 \cdot 5 = 10$