

Etunimi: MALLI RATKAISUT

Sukunimi: _____

Arvosana: _____

I. Sievennä:

TEE PIENEMMÄKSI
YKSINKERTAISTA
SIEVÄ / KAUNIS

$$\begin{aligned} \text{a) } 15y - 3y + y \\ &= 12y + y \\ &= 13y \end{aligned}$$

$$\begin{aligned} \text{c) } 7x^2 + 2x^2 \\ &= 9x^2 \end{aligned}$$

+ ja - laskuissa
potensseille
ei tapahdu
mitään

$$\begin{aligned} \text{b) } 4z + 2z^2 + 3z \\ &= 7z + 2z^2 \\ &= 2z^2 + 7z \end{aligned}$$

$$\begin{aligned} \text{d) } 8x - (-3x) \\ &= 8x + 3x \\ &= 11x \end{aligned}$$

2. Sievennä:

$$\begin{aligned} \text{a) } 3(x - 5) \\ &= 3x - 15 \end{aligned}$$

ei ole
yhtälö

$$\begin{aligned} \text{d) } -x(x^2 + 3x) \\ &= -x^3 - 3x^2 \end{aligned}$$

$$\begin{aligned} &= -x \cdot x^2 + 3x \cdot (-x) \\ &= -x^3 - 3x^2 \end{aligned}$$

$$\begin{aligned} \text{b) } 4a \cdot 2a^2 &= 4 \cdot 2 \cdot a^1 \cdot a^2 \\ &= 8a^3 = 8a^{1+2} = 8a^3 \end{aligned}$$

$$\begin{aligned} \text{e) } (6x - 3) \cdot (-2) \\ &= -12x + 6 \end{aligned}$$

$$\begin{aligned} \text{c) } 5x(x^3 + 2a^2) \\ &= 5x^4 + 10a^2x \end{aligned}$$

$$\begin{aligned} 5x \cdot x^3 + 5x \cdot 2a^2 \\ &= 5x^4 + 10a^2x \end{aligned}$$

$$\begin{aligned} \text{f) } -2x(-3x^2 + 2x - 5) \\ &= 6x^3 - 4x^2 + 10x \\ &= -2x \cdot (-3x^2) - 2x \cdot 2x - 2x \cdot (-5) \\ &= 6x^3 - 4x^2 + 10x \end{aligned}$$

3. Ratkaise yhtälöt:

a) $x - 3 = 5$

$$x = 5 + 3$$

$$x = 8$$

b) $3a = 2a - 4$

$$3a - 2a = -4$$

$$a = -4$$

c) $3y + 6 = 2y - 4$

$$3y - 2y = -4 - 6$$

$$y = -10$$

d) $-x + 3x = 0$

$$-1x + 3x = 0$$

$$2x = 0$$

$$\parallel : 2$$

$$x = 0$$

e) $6(2x - 2) = 2x + 10$

$$12x - 12 = 2x + 10$$

$$12x - 2x = 10 + 12$$

$$10x = 22$$

$$\parallel : 10$$

f) $12x + 3 = -2x - 25$

$$12x + 2x = -25 - 3$$

$$14x = -28$$

$$\parallel : 14$$

$$x = -2$$

TAVOITE $x =$

$$-x + 3x$$

$$= (3x - x)$$

$$x = 2,2$$

$$x = 2\frac{1}{5}$$