Harjoittele s. 69

30 Monomi

377 x, $4x^3$, $-x^4$ ja 171

Monomi = kerroin · muuttujan potenssi

OBS! $171 = 171 \cdot x^0$

378

Monomi	Kerroin	Muuttujaosa	aste
$5x^5$	5	x^5	5
$15x^2$	15	x^2	2
x	1	x	1
$-3x$	-3	x	1
$-x^2$	-1	x^2	2

---

379 $15x^2$ ja $-x^2$

x ja $-3x$

380

a) $-x^3$, $7x^3$ ja $-6x^3$

b) $-x^3$, $-5x^{10}$ ja $-6x^3$

c) x^4 ja x^2

381

a) 4

b) $2x$

c) $-4x^2$

d) $-2x$

e) x^2

f) -5

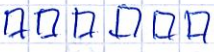
382

a) -3 

b) $4x$ 

c) $-5x$ 

d) $3x^2$ 

e) 6 

f) $-3x^2$ 

Sovella s.69

30 Monomi

383 a) x $7x$ $-12x$ $5x$ jne

b) $-2x^4$ x^4 $7x^4$ $120x^4$ jne

c) 18 20 -50 -98 jne

---

384 a) $5x = 5 \cdot 3 = 15$

b) $-7x = -7 \cdot 3 = -21$

c) $6x^2 = 6 \cdot 3^2 = 6 \cdot 9 = 54$

d) $-2x^2 = -2 \cdot 3^2 = -2 \cdot 9 = -18$

e) $2x^3 = 2 \cdot 3^3 = 2 \cdot 27 = 54$

f) $-x^3 = -3^3 = -(3 \cdot 3 \cdot 3) = -27$

---

385 a) $4x = 4 \cdot (-1) = -4$

b) $-5x = -5 \cdot (-1) = 5$

c) $8x^2 = 8 \cdot (-1)^2 = 8 \cdot 1 = 8$

d) $-x^6 = -(-1)^6 = -(1) = -1$

e) $x^3 = (-1)^3 = -1$

f) $-2x^3 = -2 \cdot (-1)^3 = -2 \cdot (-1) = 2$

---

386 a) $3x^5$ ja $6x^5$ samanmuotoisia, koska muuttujaosa sama

b) x^3 ja x^4 eivät, koska muuttujaosilla eri aste

c) $2x$ ja $2y$ eivät, koska muuttujaosat erilaiset

---

387 a) $\underline{\underline{-4x^3}}$

b) $-1x^5 = \underline{\underline{-x^5}}$

c) $1x^1 = \underline{\underline{x}}$

d) $8x^0 = 8 \cdot 1 = \underline{\underline{8}}$

Sovella s. 69

388

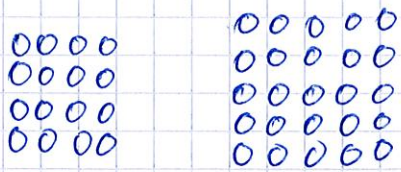
30 Monomi

a)

4. kuvio 5. kuvio

Kuvio nr	Pisteitä
1	3
2	6
3	9
4	12
5	15
n	3n

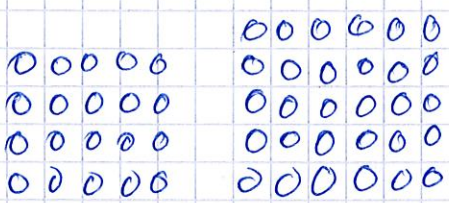
b)



4. kuvio 5. kuvio

1	1
2	4
3	9
4	16
5	25
n	n^2

c)



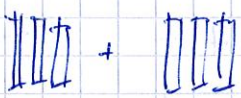
4. kuvio 5. kuvio

1	2
2	6
3	12
4	20
5	30
n	n^2+n tai $n\cdot(n+1)$

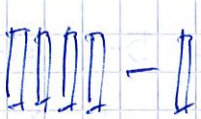
Harjoittele s.71

31 Monomien yhteen- ja vähennyslasku

389

a) 

$3x + 3x = 6x$

b) 

$4x - x = 3x$

c) 

$2x^2 + 3x^2 = 5x^2$

d) 

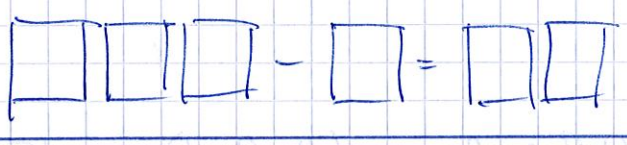
$-2x^2 + 2x^2 = 0$

390

a) $4x + 2x = 6x$ 

b) $x^2 + 2x^2 = 3x^2$ 

c) $5x - 3x = 2x$ 

d) $3x^2 - x^2 = 2x^2$ 

391

a) $6x + 6x = (6+6)x = 12x$ G

b) $7x^3 - 5x^3 = (7-5)x^3 = 2x^3$ E

c) $8x^2 + x^2 = (8+1)x^2 = 9x^2$ L

d) $10x^2 - x^2 = (10-1)x^2 = 9x^2$ L

e) $-x^3 + x^3 = (-1+1)x^3 = 0x^3 = 0$ M

f) $-7x - 8x = (-7-8)x = -15x$ A

g) $3x^3 - 9x^3 = (3-9)x^3 = -6x^3$ N

h) $-8x^3 + 2x^3 = (-8+2)x^3 = -6x^3$ N

Välivaihetta ei tarvitse esittää!

392

a) $3y^2 + x^2$ erimuotoiset termit, ei mahdollista sieventää

b) $9x^3 - x^3 = (9-1)x^3 = 8x^3$

c) $4x^3 + 4x^3 = (4+4)x^3 = 8x^3$

d) $10x^2 - 5x$ erimuotoiset

e) $y^4 + 5$ erimuotoiset

f) $8y^2 + 5y^2 = (8+5)y^2 = 13y^2$

Harjoittele s.71

31 Monomien yhteen- ja vähennyslasku

	Merkit:	Sievennetty:
	+ −	−
	− +	−
	− −	+
	+ +	+

393 a) $5+(-7) = 5-7 = -2$

b) $-8+(-9) = -8-9 = -17$

c) $5-(-7) = 5+7 = 12$

---

394 a) $6x+(-14x) = 6x-14x = (6-14)x = -8x$

b) $-16x+(-x) = -16x-x = (-16-1)x = -17x$

c) $13x-(-13x) = 13x+13x = 26x$

d) $11x^3-(-12x^3) = 11x^3+12x^3 = 23x^3$

e) $-15x-(-x) = -15x+x = -14x$

f) $20x^2-(+20x^2) = 20x^2-20x^2 = 0$

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395 a) $4x+9x+2x = (4+9+2)x = 15x$

b) $x^2+x^2+3x^2+6x^2 = (1+1+3+6) = 11x$

c) $8x+13x-7x = (8+13-7)x = 14x$

d) $11x^3-18x^3+5x^3 = (11-18+5)x^3 = -2x^3$

---

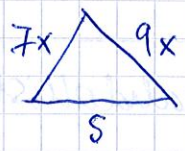
396 a) $3x+(-6x)-4x = 3x-6x-4x = (3-6-4)x = -7x = -7\cdot -5 = \underline{\underline{35}}$

b) $-2x^2-(-8x^2)-x^2 = (-2+8-1)x^2 = 5x^2 = 5\cdot(-5)^2 = 5\cdot 25 = \underline{\underline{125}}$

c) $-x-10x-(-7x) = -x-10x+7x = (-1-10+7)x = -4x = -4\cdot -5 = \underline{\underline{20}}$

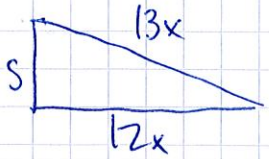
---

397 a)



$s = p-7x-9x = 30x-7x-9x$
$= (30-7-9)x$
$= \underline{\underline{14x}}$

b)



$s = p-12x-13x = 30x-12x-13x$
$= (30-12-13)x$
$= \underline{\underline{5x}}$

~~Harj~~ Sovella

S.71

31 Monomien yhteen- ja vähennyslasku

398

a) $x^2 + 2x^2$
$(-x^2) + 4x^2$

$-x^2 + 4x^2 = (-1+4)x^2 = 3x^2$

b) $5x^2 - 2x^2$
$(-4x^2) - (-7x^2)$

$-4x^2 - (-7x^2) = (-4+7)x^2 = 3x^2$

399

a) $4x$, $2x$ ja x

b) $4x$, x ja $-x$ tai
$4x$, $2x$ ja $-2x$ tai
$3x$, $2x$ ja $-x$

c) $4x$, x ja $-5x$ tai
$3x$, $-x$ ja $-2x$ tai
$3x$, $2x$ ja $-5x$

400

$5x$	$-$	$4x$	$-$	$2x$	$= 3x$
$+$		$-$		$+$	$=$
$-x$	$+$	$-3x$	$+$	$9x$	$= 5x$
$-$		$-$			$+$
$7x$	$-$	$6x$	$-$	$-4x$	$= 2x$
$=$		$=$		$=$	$=$
$-3x$	$+$	$6x$	$-$	$3x$	0