Početní operace s mnohočleny

Zadání

1) $3a-\frac{2}{3}a+\frac{4}{7}a$

2) $-2x+\frac{1}{5}x-\frac{3}{2}x+\frac{3}{4}x$

3) $(5x+3)-(2-8x)$

4) $\left(7a^3-3a^2b+2ab^2\right)-\left(-9a^3+3a^2b-6ab^2\right)$

5) $\left(8a^2-3ab+2b^2\right)\cdot\left(-6ab^2\right)$

6) $2t\left(6t^2-5\right)$

7) $\left(x^2-3x\right)(2x+5)$

8) $3n\cdot\frac{5}{6}n$

9) $2x\left(\frac{4}{5}x-\frac{2}{3}\right)$

10) $(2x-4)\left[(5x-4)2x-8\right]$

11) $(x-2)\left[3x+6(2x-5)\right]$

12) $(3x-4)(1-3x)-(3x+5)(4x-9)$

13) $(3x-4)^2$

14) $(8+6a)^2$

15) $(1-5x)(3+2x)-(4x-7)^2$

16) $3(-4-5x)-(3x+4)^2$

17) $\left(3x^2-12\right)^2$

Řešení

1)	$3a-\frac{2}{3}a+\frac{4}{7}a=\frac{21\cdot 3a-7\cdot 2a+3\cdot 4a}{21}=\frac{63a-14a+12a}{21}=\frac{61a}{21}$
2)	$-2x+\frac{1}{5}x-\frac{3}{2}x+\frac{3}{4}x=\frac{-40x+4x-30x+15x}{20}=-\frac{51}{20}x$
3)	$(5x+3)-(2-8x)=5x+3-2+8x=13x+1$
4)	$\left(7a^3-3a^2b+2ab^2\right)-\left(-9a^3+3a^2b-6ab^2\right)=7a^3-3a^2b+2ab^2+9a^3-3a^2b+6ab^2=16a^3-6a^2b+8ab^2$
5)	$\left(8a^2-3ab+2b^2\right)\cdot\left(-6ab^2\right)=-48a^3b^2+18a^2b^3-12ab^4$
6)	$2t\left(6t^2-5\right)=12t^3-10t$
7)	$\left(x^2-3x\right)(2x+5)=2x^3+5x^2-6x^2-15x=2x^3-x^2-15x$
8)	$3n\cdot\frac{5}{6}n=\frac{3n}{1}\cdot\frac{5n}{6}=\frac{15n^2}{6}=\frac{5n^2}{2}$
9)	$2x\left(\frac{4}{5}x-\frac{2}{3}\right)=\frac{8x^2}{5}-\frac{4x}{3}$
10)	$(2x-4)\left[(5x-4)2x-8\right]=(2x-4)\left[10x^2-8x-8\right]=20x^3-16x^2-16x-40x^2+32x+32=$ $=20x^3-56x^2+16x+32$
11)	$(x-2)\left[3x+6(2x-5)\right]=(x-2)[3x+12x-30]=(x-2)[15x-30]=15x^2-30x-30x+60=$ $=15x^2-60x+60$
12)	$(3x-4)(1-3x)-(3x+5)(4x-9)=3x-9x^2-4+12x-\left(12x^2-27x+20x-45\right)=$ $=3x-9x^2-4+12x-12x^2+27x-20x+45=-21x^2+22x+41$
13)	$(3x-4)^2=9x^2-24x+16$
14)	$(8+6a)^2=64+96a+36a^2$
15)	$(1-5x)(3+2x)-(4x-7)^2=3+2x-15x-10x^2-\left(16x^2-56x+49\right)=3-13x-10x^2-16x^2+56x-49=$ $=-26x^2+43x-46$
16)	$3(-4-5x)-(3x+4)^2=-12-15x-\left(9x^2+24x+16\right)=-12-15x-9x^2-24x-16=-9x^2-39x-28$
17)	$\left(3x^2-12\right)^2=9x^4-72x^2+144$