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| **Název** | Vzorce 1 |
| **Předmět, ročník** | Matematika, tercie (3. ročník osmiletého studia) |
| **Tematická oblast** | Matematika a její aplikace |
| **Anotace** | Pracovní list slouží k procvičování vzorců (A + B)2, (A – B)2 a A2 – B2. |
| **Klíčová slova** | Druhá mocnina součtu, druhá mocnina rozdílu, rozdíl druhých mocnin. |
| **Autor** | Radomír Dědek |
| **Datum** | Vytvořeno – únor 2014, ověřeno 20. 3. 2014 |
| **Škola** | Gymnázium Jana Opletala, Litovel, Opletalova 189 |
| **Projekt** | EU peníze středním školám, reg. č.: CZ.1.07/1.5.00/34.0221 |

Příklad 1: Uprav pomocí vzorců: (A+B)2 = A2 + 2AB + B2, (A–B)2 = A2 – 2AB + B2, (A+B).(A–B) = A2 – B2

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| $$\left(x+1\right)^{2}=$$ | $$\left(x-2\right)^{2}=$$ |
| $$\left(y+3\right)^{2}=$$ | $$\left(y-4\right)^{2}=$$ |
| $$\left(a+7\right)^{2}=$$ | $$\left(a-5\right)^{2}=$$ |
| $$\left(x+3\right).\left(x-3\right)=$$ | $$\left(2+y\right).\left(2-y\right)=$$ |
| $$\left(9+a\right).\left(9-a\right)=$$ | $$\left(a+6\right).\left(a-6\right)=$$ |
| $$\left(2x+1\right)^{2}=$$ | $$\left(3x-1\right)^{2}=$$ |
| $$\left(5a+1\right)^{2}=$$ | $$\left(4a-1\right)^{2}=$$ |
| $$\left(4x+1\right).\left(4x-1\right)=$$ | $$\left(1-3a\right).\left(1+3a\right)=$$ |
| $$\left(2y+3\right)^{2}=$$ | $$\left(5y-4\right)^{2}=$$ |
| $$\left(7x+2\right)^{2}=$$ | $$\left(4x-3\right)^{2}=$$ |
| $$\left(2x+y\right)^{2}=$$ | $$\left(2x-3y\right)^{2}=$$ |
| $$\left(5a+3b\right)^{2}=$$ | $$\left(3a-4b\right)^{2}=$$ |
| $$\left(3y^{2}+2x^{3}\right)^{2}=$$ | $$\left(4x^{3}-5x^{3}y\right)^{2}=$$ |
| $$\left(8x+6y\right).\left(8x-6y\right)=$$ | $$\left(a+5b\right).\left(a-5b\right)=$$ |
| $$\left(2y-3\right).\left(2y+3\right)=$$ | $$\left(7x+5\right).\left(7x-5\right)=$$ |
| $$\left(6a-9b\right).\left(6a+9b\right)=$$ | $$\left(4a^{2}+7b^{3}\right).\left(4a^{2}-7b^{3}\right)=$$ |

Příklad 2: Uprav pomocí vzorců: (A+B)2 = A2 + 2AB + B2, (A–B)2 = A2 – 2AB + B2, (A+B).(A–B) = A2 – B2

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| $$\left(2x^{2}y^{3}+6x^{3}y\right)^{2}=$$ |  |
| $$\left(5x^{3}y^{4}-2x^{2}y^{2}\right)^{2}=$$ |  |
| $$\left(4a^{3}b^{2}c+ab^{2}c^{3}\right)^{2}=$$ |  |
| $$\left(3x^{2}y^{3}z^{4}-5x^{3}y^{2}z\right)^{2}=$$ |  |
| $$\left(3x^{2}y^{3}z+4xy^{2}z^{2}\right).\left(3x^{2}y^{3}z-4xy^{2}z^{2}\right)=$$ |  |
| $$\left(9x^{3}y^{2}z^{4}+6x^{2}y^{3}z^{2}\right).\left(9x^{3}y^{2}z^{4}-6x^{2}y^{3}z^{2}\right)=$$ |  |

Příklad 1: Výsledky.

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| $\left(x+1\right)^{2}=$ $x^{2}+2x +1$ | $\left(x-2\right)^{2}=$ $x^{2}-4x+4$ |
| $\left(y+3\right)^{2}=$ $y^{2}+6y+9$ | $\left(y-4\right)^{2}=$ $y^{2}-8y+16$ |
| $\left(a+7\right)^{2}=$ $a^{2}+14a+49$ | $$\left(a-5\right)^{2}= a^{2}-10a+25$$ |
| $\left(x+3\right).\left(x-3\right)=$ $x^{2}-9$ | $\left(2+y\right).\left(2-y\right)=$ $4-y^{2}$ |
| $\left(9+a\right).\left(9-a\right)=$ $81-a^{2}$ | $\left(a+6\right).\left(a-6\right)=$ $a^{2}-36$ |
| $$\left(2x+1\right)^{2}=4x^{2}+4x+1$$ | $$\left(3x-1\right)^{2}=9x^{2}-6x+1$$ |
| $$\left(5a+1\right)^{2}=25a^{2}+10a+1$$ | $$\left(4a-1\right)^{2}=16a^{2}-8a+1$$ |
| $$\left(4x+1\right).\left(4x-1\right)=16x^{2}-1$$ | $$\left(1-3a\right).\left(1+3a\right)=1-9a^{2}$$ |
| $$\left(2y+3\right)^{2}=4y^{2}+12y+9$$ | $$\left(5y-4\right)^{2}=25y^{2}-40y+16$$ |
| $$\left(7x+2\right)^{2}=49x^{2}+28x+4$$ | $$\left(4x-3\right)^{2}=16x^{2}-24x+9$$ |
| $$\left(2x+y\right)^{2}=4x^{2}+4xy+y^{2}$$ | $$\left(2x-3y\right)^{2}=4x^{2}-12xy+9y^{2}$$ |
| $$\left(5a+3b\right)^{2}=25a^{2}+30ab+9b^{2}$$ | $$\left(3a-4b\right)^{2}=9a^{2}-24ab+16b^{2}$$ |
| $$\left(3y^{2}+2x^{3}\right)^{2}=9y^{4}+12y^{2}x^{3}+4x^{3}$$ | $$\left(4x^{3}-5x^{3}y\right)^{2}=16x^{6}-40x^{6}y+25x^{6}y^{2}$$ |
| $$\left(8x+6y\right).\left(8x-6y\right)=64x^{2}-36y^{2}$$ | $$\left(a+5b\right).\left(a-5b\right)= a^{2}-25b^{2}$$ |
| $$\left(2y-3\right).\left(2y+3\right)=4y^{2}-9$$ | $$\left(7x+5\right).\left(7x-5\right)=49x^{2}-25$$ |
| $$\left(6a-9b\right).\left(6a+9b\right)=36a^{2}-81b^{2}$$ | $$\left(4a^{2}+7b^{3}\right).\left(4a^{2}-7b^{3}\right)=16a^{4}-49b^{6}$$ |

Příklad 2: Výsledky.

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| $$\left(2x^{2}y^{3}+6x^{3}y\right)^{2}=4x^{4}y^{6}+24x^{5}y^{4}+36x^{6}y^{2}$$ |
| $$\left(5x^{3}y^{4}-2x^{2}y^{2}\right)^{2}=25x^{6}y^{8}-20x^{5}y^{6}+4x^{4}y^{4}$$ |
| $$\left(4a^{3}b^{2}c+ab^{2}c^{3}\right)^{2}=16a^{6}b^{4}c^{2}+8a^{4}b^{4}c^{4}+a^{2}b^{4}c^{6}$$ |
| $$\left(3x^{2}y^{3}z^{4}-5x^{3}y^{2}z\right)^{2}=9x^{4}y^{6}z^{8}-30x^{5}y^{5}z^{5}+25x^{6}y^{4}z^{2}$$ |
| $$\left(3x^{2}y^{3}z+4xy^{2}z^{2}\right).\left(3x^{2}y^{3}z-4xy^{2}z^{2}\right)=9x^{4}y^{6}z^{2}-16x^{2}y^{4}z^{4}$$ |
| $$\left(9x^{3}y^{2}z^{4}+6x^{2}y^{3}z^{2}\right).\left(9x^{3}y^{2}z^{4}-6x^{2}y^{3}z^{2}\right)=81x^{6}y^{4}z^{8}-36x^{4}y^{6}z^{4}$$ |

Zdroje:

Vlastní tvorba autora