Arkalyk state pedagogical Institute named after Y. Altynsarin



Theme: Power

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" People unfamiliar with algebra can not imagine the wonderful things that can be achieved with the help of ... called science."

G.W Leibniz

* Determination of a natural indicator



Powers of a with natural exponent n is the product of n factors, each of which is equal to

a.

 $a^n = \mathbf{A} \otimes \mathbf{A} \cdot \mathbf{A} \otimes \mathbf{A}$

п раз

* Properties with a natural indicator of the degree of



 $a^m \cdot a^n = a^{m+n}$ $a^{m} \div a^{n} = a^{m-n}$ $(ab)^{n} = a^{n}b^{n}$ $(a^{m})^{n} = a^{mn}$

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* Multiplying powers with the same bases



* The division of powers with the same bases

For any — arbitrary natural number $a \neq 0$ and m and n, such that m> n $a^m \div a^n = a^{m-n}$

$$a^{m} \div a^{n} = a^{m-n}$$

 $(ab)^n = a^n b^n$

When dividing powers with the same base bases are left unchanged , and the dividend is subtracted from the index index divider

*Exponentiation works



*Exponentiation degree

For any number and a random natural numbers m and n

 a^m

 $=a^{mn}$

 $(a^m)^n = a^{mn}$

 $(ab)^n = a^n h^n$

With the construction of the degree of the power base is left unchanged , and the figures are multiplied

*Exponentiation fraction



History of the number of degree



In his famous book " Arithmetic " Diophantus of Alexandria described the first natural degree



Rene Descartes in his "geometry" (1637), we find the current designation of degrees $a^2, a^3, ...$

*" Silences " Game

1. Follow these steps: $x^{11} \cdot x \cdot x^2$; $x^{14} : x^5$; $(a^4)^3$; $(-3a)^2$.

2. Compare the expression to zero : $(-5)^7$; $(-6)^{18}$; $(-4)^{11}$. $(-4)^8$ $(-5)^{18}$. $(-5)^6$; $-(-4)^8$.

3. Calculate the value of the expression : -1· 3^2 ; (-1·3)² 1·(-3)²; - (2·3)²; 1^2 · (-3)²

THE GAME " THE PAIR OF NUMBERS "

1)
$$2xy \cdot 3x^2y^5$$
1) $-5x^4y^5$ 2) $3xy^3 \cdot x^3y^6$ 2) $-x^5y^{10}z^3$ 3) $-0,6ac^3 \cdot (-8)a^2c^4$ 3) $6a^3c^5$ 4) $-5a^2c \cdot 2ac \cdot (-0,6c^3)$ 4) $6x^3y^6$ 5) $xy^3z^3x \cdot x^3y^7$ 5) $-9x^4y^6z^2$ 6) $4,8a^3c^7$ 7) $2x^4y^9$



*ANSWERS : (1, 4) (2, 7) (3, 6) (4, 3) (5, 2)

Computational pause

1)
$$c^{3} \cdot c^{5} =$$

2) $c^{8} : c^{6} =$
3) $(c^{4})^{3} =$
4) $c^{3} \cdot c^{5} : c^{6} =$
5) $c^{14} \cdot c^{8} =$
6) $c^{7} : c^{5} =$
7) $(c^{4})^{3} \cdot c^{5} =$
8) $c^{4} \cdot c^{5} \cdot c^{0} =$
9) $c^{16} : c^{8} =$
10) $(c^{5})^{3} =$

*Comparing expressions

Compare without performing calculations. Find the correct inequalities. From their respective letters make up the name of the architect, the project is the building of the Bolshoi Theater in Moscow was built in 1825 :

$$\begin{array}{c} (\textbf{g}) \ (-15)^{10} < 0 & (\textbf{O}) \ (-6,5)^4 > (-8,4)^3 \\ \hline \textbf{C} \ (-3,2)^{13} > 0 & \textbf{B} \ (-3,4)^2 > -3,4^2 \\ \hline \textbf{b} \ -4,1^{12} < 0 & \textbf{A} \ \mathbf{X}^{101} \cdot \ \mathbf{X}^{21} < 0 \\ \hline \textbf{M} \ -(-2)^{62} > 0 & \textbf{E} \ \frac{(-15)^4}{-15^4} < 0 \\ \end{array}$$



*What number illustrates a circle?

Find out how many shows a circle, if the shaded portion shows a specified number . A record in the form of a degree .



Reflection

I know	I learned	I want to know

THANK YOU FOR ATTENTION



