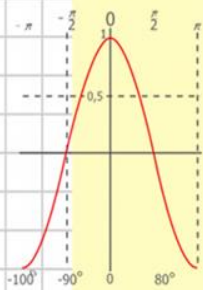
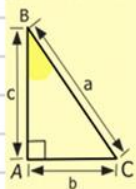
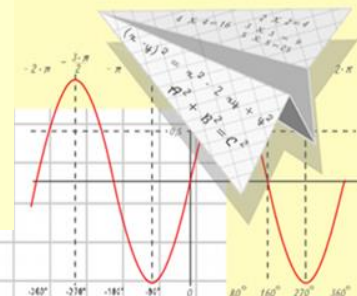


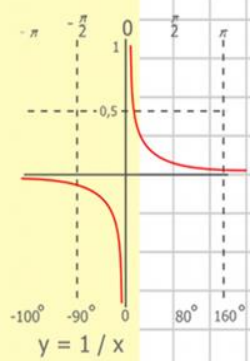
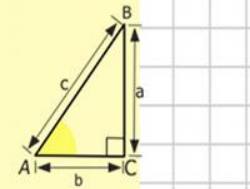
31.01.2023
Алгебра 8-А,В клас



$y = \cos x$

- $2 \times 2 = 4$
- $3 \times 3 = 9$
- $4 \times 4 = 16$
- $5 \times 5 = 25$
- $6 \times 6 = 36$
- $7 \times 7 = 49$
- $8 \times 8 = 64$

Тема уроку: Властивості арифметичного квадратного кореня



$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 840 \\ \hline 10500 \end{array}$$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

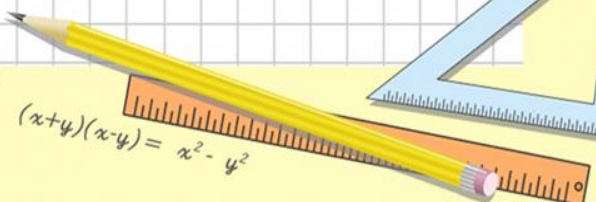
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$



$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$



$$(x+y)(x-y) = x^2 - y^2$$

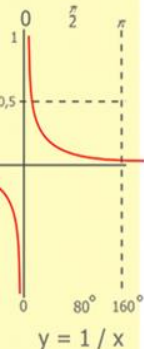
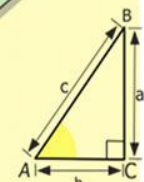
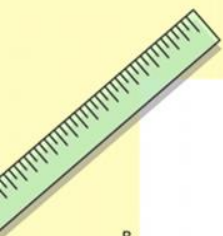
Властивість 1. (корінь з квадрата). Для будь-якого дійсного числа a виконується рівність

$$\sqrt{a^2} = |a|, \quad a \in R;$$

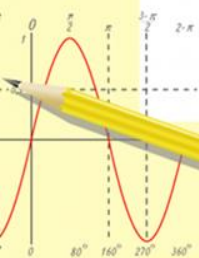
Приклади

$$\sqrt{5^2} = |5| = 5$$

$$\sqrt{(-7)^2} = |-7| = 7$$



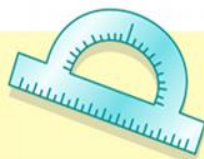
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 840 \\ \hline 10500 \end{array}$$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

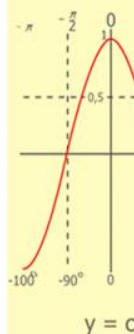
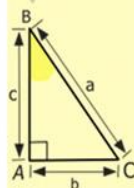
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

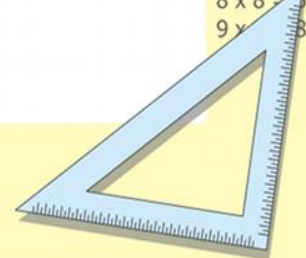


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



Властивість 2. (квадратний корінь із степеня).

Для будь-якого дійсного числа a і
натурального числа n виконується рівність

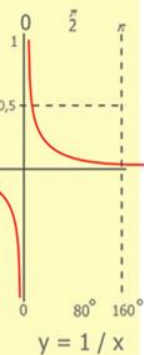
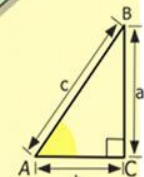
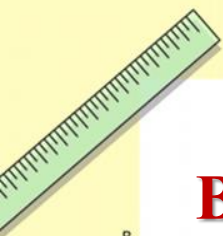
$$\sqrt{a^{2n}} = |a^n|, \quad a \in R \quad n \in N;$$

Приклади

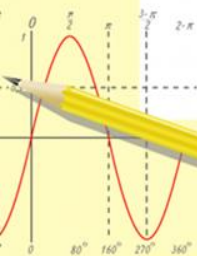
$$\sqrt{2^{12}} = 2^6 = 64$$

$$\sqrt{3^6} = 3^3 = 27$$

$$\sqrt{a^{14}} = \sqrt{(a^7)^2} = |a^7|,$$



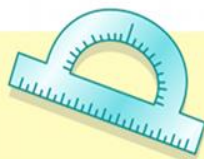
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 840 \\ \hline 10500 \end{array}$$



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

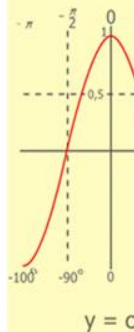
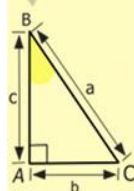
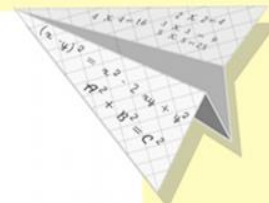
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$



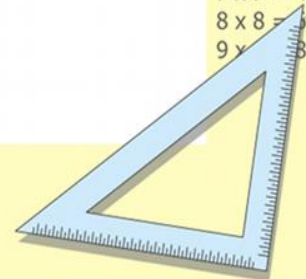
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



$$y = \cos$$

$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



Властивість 3. (квадратний корінь з добутку).

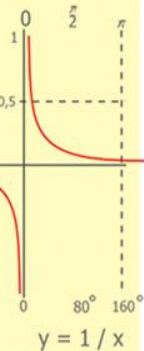
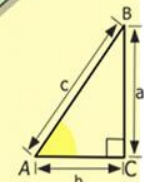
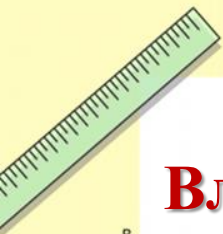
Для будь-яких дійсних чисел a і b таких, що $a \geq 0$ і $b \geq 0$, виконується рівність

$$\sqrt{a \cdot b} = \sqrt{a} \cdot \sqrt{b}.$$

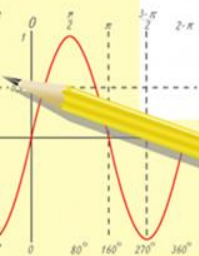
Приклади

$$\sqrt{64 \cdot 81} = \sqrt{64} \cdot \sqrt{81} = 8 \cdot 9 = 72$$

$$\sqrt{2} \cdot \sqrt{32} = \sqrt{2 \cdot 32} = \sqrt{64} = 8$$



$$\begin{array}{r} 1 \\ \times 2500 \\ \hline 2500 \\ + 84 \\ \hline 105000 \end{array}$$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

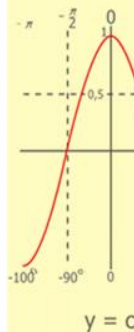
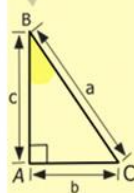
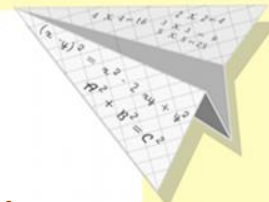
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

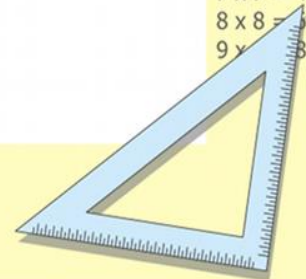


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



Властивість 4. (квадратний корінь із дробу).

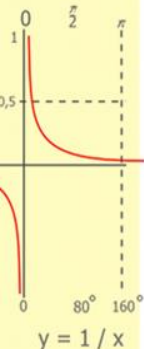
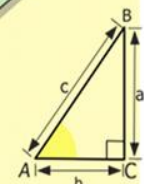
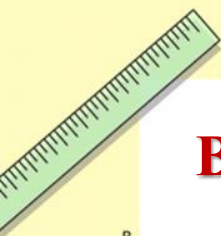
Для будь-яких дійсних чисел a і b таких, що $a \geq 0$ і $b > 0$, виконується рівність

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}.$$

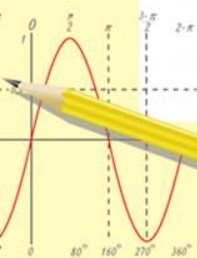
Приклади

$$\sqrt{\frac{16}{25}} = \frac{\sqrt{16}}{\sqrt{25}} = \frac{4}{5}$$

$$\frac{\sqrt{3}}{\sqrt{12}} = \sqrt{\frac{3}{12}} = \sqrt{\frac{1}{4}} = \frac{1}{2}$$



$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 840 \\ \hline 10500 \end{array}$$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

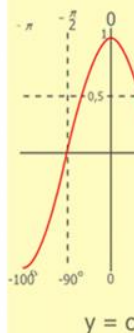
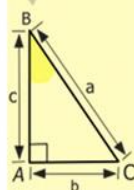
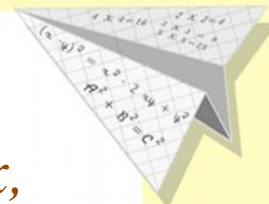
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

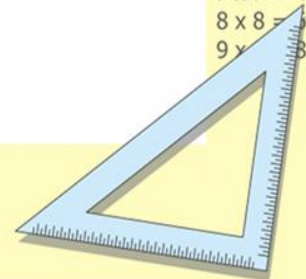


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



Виконання письмових вправ

1. Знайдіть значення виразів:

$$\sqrt{49 \cdot 0,36}; \sqrt{18 \cdot 8}; \sqrt{27 \cdot 3}; \sqrt{25^2 - 24^2};$$

$$\sqrt{101^2 - 20^2}; \sqrt{5\frac{4}{9}}; \sqrt{11} \cdot \sqrt{11}.$$

Розв'язання:

$$\sqrt{49 \cdot 0,36} = \sqrt{49} \cdot \sqrt{0,36} = 7 \cdot 0,6 = 4,2$$

$$\begin{aligned} \sqrt{18 \cdot 8} &= \sqrt{18} \cdot \sqrt{8} = \sqrt{2 \cdot 9} \cdot \sqrt{2 \cdot 4} = \sqrt{2} \cdot \sqrt{9} \cdot \sqrt{2} \cdot \sqrt{4} = (\sqrt{2})^2 \cdot 3 \cdot 2 = \\ &= 2 \cdot 3 \cdot 2 = 12 \end{aligned}$$

$$\sqrt{25^2 - 24^2} = \sqrt{(25 - 24)(25 + 24)} = \sqrt{1 \cdot 49} = 1 \cdot 7 = 7$$

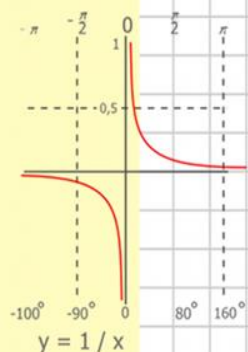
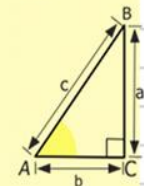
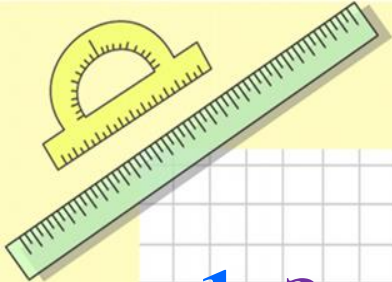
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

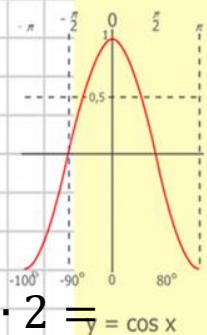
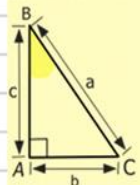
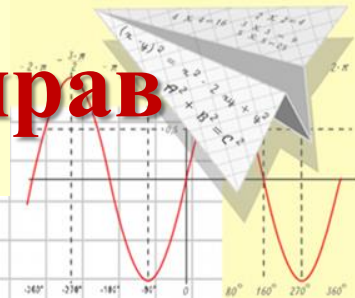
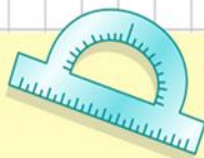
$$\sin 90^\circ = 1$$

$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

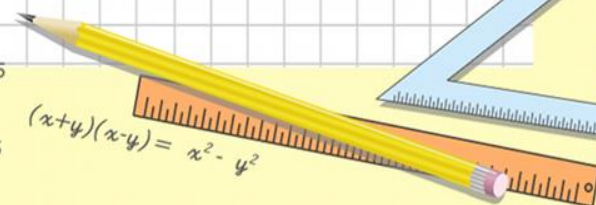
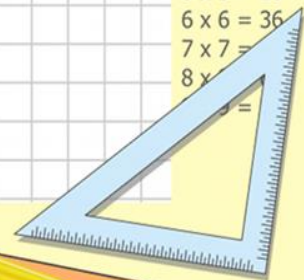
$$(x+y)(x-y) = x^2 - y^2$$



$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$



$$\begin{aligned} 2 \times 2 &= 4 \\ 3 \times 3 &= 9 \\ 4 \times 4 &= 16 \\ 5 \times 5 &= 25 \\ 6 \times 6 &= 36 \\ 7 \times 7 &= 49 \\ 8 \times 8 &= 64 \end{aligned}$$



Виконання письмових вправ

2. Обчисліть:

а) $\sqrt{(0,1)^2};$

в) $\sqrt{(-0,8)^2};$

б) $\sqrt{(-0,4)^2};$

г) $2\sqrt{(-23)^2};$

$$\sqrt{(0,1)^2} = |0,1| = 0,1$$

$$\sqrt{(-0,8)^2} = |-0,8| = 0,8$$

$$\sqrt{(-0,4)^2} = |-0,4| = 0,4$$

$$2\sqrt{(-23)^2} = 2 \cdot |-23| = 46$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

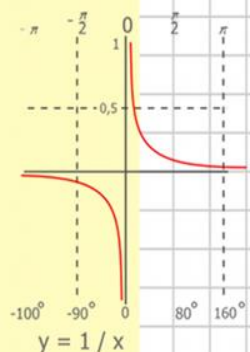
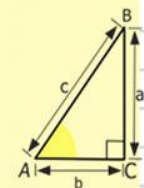
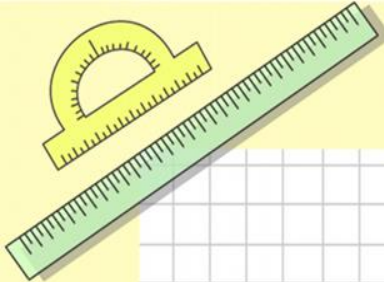
$$\sin 90^\circ = 1$$

$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

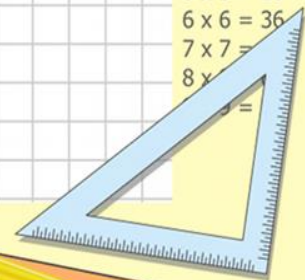
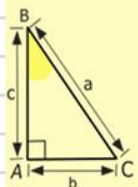
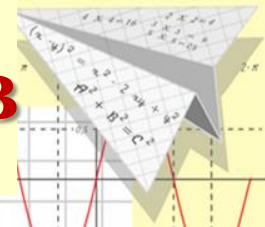
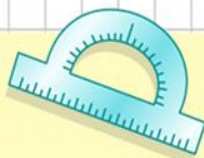
$$(x+y)(x-y) = x^2 - y^2$$

$$y = \cos x$$

$$\begin{aligned} 2 \times 2 &= 4 \\ 3 \times 3 &= 9 \\ 4 \times 4 &= 16 \\ 5 \times 5 &= 25 \\ 6 \times 6 &= 36 \\ 7 \times 7 &= 49 \\ 8 \times 8 &= 64 \end{aligned}$$



$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 8400 \\ \hline 105000 \end{array}$$



Виконання письмових вправ

3) Обчисліть:

а) $3\sqrt{(-2)^6}$;

$$3\sqrt{(-2)^{2 \cdot 3}} = 3 \cdot |(-2)^3| = 3 \cdot |-8| = 24$$

б) $-3\sqrt{5^4}$;

$$-3 \cdot \sqrt{5^{2 \cdot 2}} = -3 \cdot |5^2| = -3 \cdot 25 = -75$$

в) $-\sqrt{(-2)^{12}}$;

$$-\sqrt{(-2)^{2 \cdot 6}} = -|(-2)^6| = -64$$

г) $0,1\sqrt{(-3)^8}$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

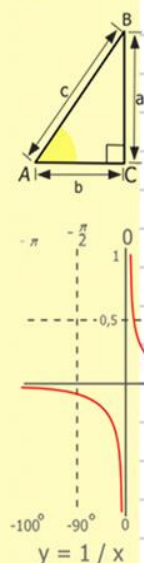
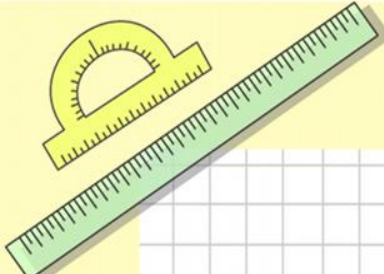
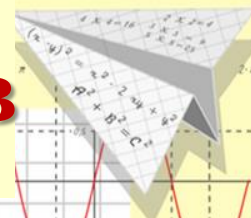
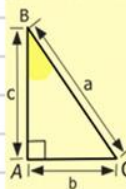
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

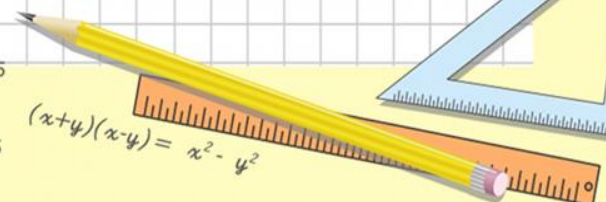
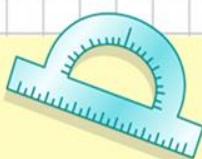
$$(x+y)(x-y) = x^2 - y^2$$

$$\begin{aligned} 2 \times 2 &= 4 \\ 3 \times 3 &= 9 \\ 4 \times 4 &= 16 \\ 5 \times 5 &= 25 \\ 6 \times 6 &= 36 \\ 7 \times 7 &= 49 \\ 8 \times 8 &= 64 \end{aligned}$$

$$y = \cos x$$



$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$



Домашнє завдання:

- Опрацювати §17.
- Виконати письмово №629, 633(1-4), 643.

629. Обчисліть:

- 1) $\sqrt{36 \cdot 49}$;
- 2) $\sqrt{100 \cdot 4}$;
- 3) $\sqrt{0,49 \cdot 1,69}$;
- 4) $\sqrt{0,09 \cdot 196}$;
- 5) $\sqrt{1,44 \cdot 0,16 \cdot 400}$;
- 6) $\sqrt{2,89 \cdot 10\,000 \cdot 0,25}$.

633. Обчисліть:

- 1) $\sqrt{1,7^2}$;
- 2) $\sqrt{(-0,3)^2}$;
- 3) $3\sqrt{4^2}$;
- 4) $-2\sqrt{7^2}$;

643. Знайдіть значення виразу:

- 1) $\sqrt{10^4}$;
- 2) $\sqrt{3^6}$;
- 3) $\sqrt{2^8}$;
- 4) $\sqrt{(-5)^4}$;
- 5) $\sqrt{(-1)^{10}}$;
- 6) $\sqrt{(-2)^{12}}$.

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$$\frac{a}{A} = \frac{b}{B} = \frac{c}{C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

$$\begin{cases} y = \sin 90^\circ \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

$$(x+y)(x-y) = x^2 - y^2$$