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$y = a^x$ $y = \log_a x$ ($a > 0, a \neq 1$).

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$y = x, y = x^2, y = x^3, y = \frac{1}{x}, y = x^{\frac{1}{2}}$

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$$\frac{\pi}{2} \pm \alpha, \pi \pm \alpha$$

$$y = \sin x, y = \cos x, y = \tan x$$

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$$\sin^2 x + \cos^2 x = 1, \frac{\sin x}{\cos x} = \tan x$$

5 $y = A\sin(\omega x + \varphi)$ $y = A\sin(\omega x + \varphi)$, A ,
 ω, φ .
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4. $\frac{a+b}{2} \sqrt{ab} \quad (a \geq 0, b \geq 0)$

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1 $y = C$ (C), $y = x, y = x^2, y = \frac{1}{x}$.

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•

$(C)' = 0$ (C) $(x^n)' = nx^{n-1}, n \in \mathbf{N}_+$

$(\sin x)' = \cos x$ $(\cos x)' = -\sin x$

$(e^x)' = e^x$ $(a^x)' = a^x \ln a$ ($a > 0, a \neq 1$)

$(\ln x)' = \frac{1}{x}$ $(\log_a x)' = \frac{1}{x} \log_a e$ ($a > 0, a \neq 1$).

•

1 $[u(x) \pm v(x)]' = u'(x) \pm v'(x)$.

2 $[u(x)v(x)]' = u'(x)v(x) + u(x)v'(x)$.

3 $\left[\frac{u(x)}{v(x)} \right]' = \frac{u'(x)v(x) - u(x)v'(x)}{v^2(x)}$ ($v(x) \neq 0$).

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1 $|a+b| = |a|+|b|$.

2 $|a-b| = |a-c|+|c-b|$.

3

$$|ax+b| \leq c \iff |ax+b| \leq c \iff |x-a|+|x-b| \leq c.$$

2. , , .

$$1 \quad |\alpha| \cdot |\beta| = |\alpha \cdot \beta|.$$

$$2 \quad (a^2 + b^2)(c^2 + d^2) = (ac + bd)^2.$$

$$3 \quad \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} + \sqrt{(x_2 - x_3)^2 + (y_2 - y_3)^2} \geq \sqrt{(x_1 - x_3)^2 + (y_1 - y_3)^2}.$$

(.)

3.

$$\sum_{i=1}^n a_i^2 \cdot \sum_{i=1}^n b_i^2 = \left(\sum_{i=1}^n a_i b_i \right)^2.$$

4.

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6.

$$(1+x)^n > 1+nx \quad (x > -1, x \neq 0, n \geq 1),$$

$n \geq 1$.

7.

8.