

Exponential function

№1. Find out ranges of the following functions:

1. $y = -9^x$;
2. $y = 0.2^x + 1$;
3. $y = 7^x - 4$;
4. $y = 6^{|x|}$.

№2. Find the maximum value of the function $y = \left(\frac{1}{6}\right)^x$ on the interval $[-2; 3]$.

№3. Solve an inequality $2^{\sqrt{x}} > 2$.

№4. Compare $(7 + 4\sqrt{3})^{-5.2}$ and $(7 - 4\sqrt{3})^{5.6}$.

№5. How many solutions do these equations have?

1. $2^x = x$;
2. $2^x = x^2$;
3. $2^{-x} = 2 - x^2$.

№6. Plot the graph of the function:

1. $y = |2^x - 1|$;
2. $y = |2^{x+1} - 2|$;
3. $y = 2^{|x|} + 1$;
4. $y = 2^{|x+1|} - 2$.

№7. Determine whether the function $y = \frac{2^x - 1}{2^x + 1}$ is even or odd.

№8. Determine the range of the function $y = \frac{2^x - 1}{2^x - 4}$.

№9. Given the function $f(x) = 5^x + \frac{25}{5^x}$. What value of a makes $f(x + a)$ an even function?

№10. What value of a makes the maximum value of the function $f(x) = -\left(\frac{1}{9}\right)^x + \frac{7}{2} \cdot 3^{-x} - 3a^2$ on the interval $[-1; 0]$ negative?